RATIONALES FOR CORPORATE CLIMATE CHANGE TARGET SETTING AND REPORTING: AN INVESTIGATION

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ABSTRACT

With the increasing acceptance of climate change as one of the most challenging political, societal and business issues globally and nationally, some New Zealand firms have decided to adhere to a specific emissions reduction target to show their commitment to climate change mitigation. The New Zealand government has expressed a commitment to encourage change through the introduction of the Zero Carbon Act, which sets a national target of net zero-carbon by 2050. Nevertheless, it is still unclear what this means in terms of ecological resilience and planetary climate change boundaries when firms set their targets. This research asks why firms would or would not adopt emissions reduction target setting and explores the extent to which such targets are connected to scientific thresholds for climate, thus anticipating an additional constraint on voluntary climate target-setting and reporting.

To understand the rationales and practices of corporate climate target setting and reporting, content analysis (first phase) and discourse analysis (second phase) were used to analyse corporate public reports of the top 50 NZX listed companies (by market capitalisation) which enjoyed consecutive exchange membership for the years 2012 to 2016. This was supplemented by twenty-nine interviews with corporate senior managers representing twenty-three companies. These interviewees are responsible for continuing or for looking into their organisational climate change actions.

The findings reveal that a large number of companies (31 of the 50 sampled) failed to disclose any climate-related information in their public reports for the period 2012 to 2016. The climate information reported by 19 of the companies was generally made in a surprisingly opaque way, indicating that there is a lot of room for New Zealand companies to improve their climate reporting. Rationales for climate mitigation mirror those for wider social and environmental reporting. Companies report for a variety of

reasons, including as per their business case, regulatory compliance, social responsibility, competitive advantage, public relations and as ‘a balancing act’, indicating a ‘win-win’ logic.

In terms of connection to the wider planetary boundaries for climate change, the findings indicate a large number of companies in the sample failed to consider their climate mitigation efforts. More specifically, emissions reduction target setting and reporting which describe contributions to ecological sustainability and resilience enhancement were often neglected. Many of the sampled companies prefer setting intensity targets to absolute targets, and most ignore science-based targets. Their targets are mostly associated with companies’ direct emissions. These might be misleading, underestimating emissions and the full carbon impacts of corporate activities. The observations support legitimacy theory, which indicates that some companies are likely to pursue a symbolic approach focusing on low-hanging fruit without making any radical change in their GHG emissions performance. However, the study also found evidence of mixed institutional pressure factors for adopting climate change mitigation amongst those sampled companies. Over time, there is an increase in the number of companies reporting and setting climate change targets, which might be explained by an increase in regulatory and normative pressures. However, there is limited evidence showing mimetic isomorphism even though investors (especially overseas investors of NZX companies) were found to have a strong interest in corporate emissions targets and performance.

The research makes contributions that enhance an understanding of the rationales for corporate emissions reduction target setting; the sense-making of these targets and the challenges associated with encouraging corporate emissions reductions in the near future.

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CHAPTER 1: INTRODUCTION

1.1. Setting the Scene

1.1.1. Scientific Climate Change Requirements and National Responses

Climate change is increasing the frequency and intensity of extreme weather events such as heatwaves, droughts, fires and floods (UN 2020). The list of consequences is long, with these events likely to reduce agricultural production and food security, increase health risks, damage critical infrastructure, interrupt the provision of water, sanitation, education, energy and transport, disrupt mass migration as well as increase rates of extinction (UN 2020). The UN Office on Disaster Risk Reduction (2020) documented 7,348 recorded disaster events worldwide during the past two decades (2000-2020), an increase from 4,212 reported disasters from natural hazards in the period from 1980 to 1999. Two decades of disaster also lead to $2.97 trillion in losses to the global economy, and increased from $1.63 trillion in the period of 1980 to 1999. Changes in the global climate are argued to exacerbate climate disasters and amplify the risk of extreme weather disasters (IPCC 2018).

CO_2 concentrations in our atmosphere have proved to be permanent, increasing without any sign of peaking or slowing down - a serious concern. The Scripps Institution of Oceanography (2020) noted in October 2020 that the most recent atmospheric measurements showed that our global carbon dioxide levels at 411.29 parts per million (ppm) had surpassed a significant milestone. In the last 100 years, our climate has warmed by 1^{o}C. If the current growth rate of CO_2 remains at 2.11 ppm per year (from 2005 to 2014), the carbon level is expected to reach 500 ppm within 50 years. It is on track to do so, with a 3^{o}C warming of the average global temperature.

The on-going COVID-19 pandemic has had a rapid and substantial impact on the global economy. The International Energy Agency (2020) noted that global energy-related greenhouse gas (GHG) emissions decreased by 7% in 2020 due to the steep drop in demand for fossil fuel sources. However, based on most government's current policies, annual GHG emissions are expected to rebound in 2021, rising to 36 gigatonnes by 2030 if no large shifts in government policies take place. Global emissions for 2019 have been estimated at around 33 gigatonnes, increasing from 20.5 gigatonnes in 1990. It should be noted that atmospheric concentration is the result of past and current emissions as well as the very long lifetime of CO_2. Even if we completely stopped generating emissions today, global warming would continue for at least several decades, if not centuries (Global Climate Change 2020).

If we want to return the Earth to levels as in the Holocene epoch, 300 to 350 ppm CO_2 above the pre-industrial level would be the global carbon emissions threshold/target (Rockström *et al*., 2009; Hansen 2006). In other words, we must halve our emissions every decade in the next three decades to return to a more sustainable level of emissions.

High-income developed countries such as the US, Australia, New Zealand, Canada, Europe, and Japan have a substantially higher degree of responsibility for climate change than developing countries because their cumulative national emissions exceed their fair share of the atmosphere with respect to the planetary boundary (Hickel, 2020). Therefore, these countries must not only reduce emissions to zero more quickly than other countries, but they must also pay down their climate debts. New Zealand emissions per capita are 17.84 tonnes which is the 21st biggest per-capita contributor to climate change in the world and the fifth-highest per capita emissions amongst the OECD (OECD, 2018).

The Ministry for the Environment (2019) notes that New Zealand is already being affected by climate change. Sea-level rose between 14 and 22 centimeters from 1916 to 2016. Glacier ice volume decreased 25 percent from 1977 to 2016. Ocean acidity increased by 26 percent between 1998 and 2016. Climate change impact across New Zealand is expected to intensify in the coming decades. Sea-level rise puts property at risk; flooding and heatwaves impact transportation, communication, and power networks; acidifying ocean affects the fish harvest, more extreme fire conditions and pests cause species to move to other areas, or are lost to extinction.

The New Zealand economy has significantly relied on exports from its primary sectors (agriculture, horticulture, forestry, mining, and seafood industries) and also tourism, which contributes nearly 8 and 6 percent respectively towards total GDP (Ministry for the Environment 2018a, 2018b). The energy (including transport) and agriculture sectors dominated contributions to emissions in 2017, with a total of 88.8 percent (Ministry for the Environment 2019d). The adverse effects of extreme weather events on agricultural production and export capabilities are evident. For example, droughts in 1997/98 and 2013/14 led to significant economic impacts (a reduction of up to 0.7% NZ GDP), highlighting the exposure of New Zealand's main export industries to climate risk. Due to the drought, the actual world dairy prices rose by 40 percent between January and April 2013, hence, an increase in food prices, proving the severe short-term macroeconomic impacts (Reserve Bank of New Zealand, 2013).

In December 2015, the Paris Agreement on climate change was adopted by 191 countries under the United Nations Framework Convention on Climate Change. The purpose of the Paris Agreement is to keep the global average temperature less than 2^{o}C above pre-industrial levels. New Zealand ratified the Paris Agreement in 2016 with the target to reduce GHG emissions by 30 percent below the gross emissions for the period 2021 to

2030. The Climate Action Tracker (2019) asserts that New Zealand's national commitment is insufficient to meet its fair share range and is not consistent with the Paris Agreement. If all government targets were in this range, the average global warming is likely to be over 2ºC and up to 3ºC.

In New Zealand, so far, no meaningful progress has been made on national emissions reduction targets as the national gross GHG emissions in 2017 (the most recently updated data reported by Ministry for the Environment) were 81 million tonnes of carbon dioxide equivalent, an increase of 23 percent as compared with the 1990 level. This might indicate the continuation of relatively weak policy regimes. As one might expect, the COVID-19 pandemic has put a number of climate change regulatory actions on hold as well as the failure to address climate change from the perspective of New Zealand budget 2020 funding allocations (PwC 2020).

1.1.2. Business Responses to Climate Change

Climate-related responses by the business community are key to achieving domestic and international GHG emissions reduction targets (Tang, 2016), as they are both part of the climate change problem (e.g., their operational activities emit emissions) and part of the solution (e.g., they provide financial and technological resources to mitigate and adapt to climate change) (Boiral *et al*., 2012; Sullivan 2017). Corporate climate change targets are supposedly designed to achieve actual emissions reductions in corporate activities having environmental impact. Many companies consider climate change targets important, incorporating them into their strategic and operational planning tools (Jose & Lee 2007).

Investors are increasingly focused on assessing how well companies are positioned for both climate change and the net-zero transition. Climate Action 100+ (the largest investor

engagement initiative on climate change of 545 investor signatories that manage total $52 trillion assets- total global investment assets in 2021 is $111 trillion) recently wrote to 160 global companies that have significant GHG emissions to require them to publish strategies to reduce emissions by 45 percent by 2030 and to reach net-zero by 2050 (ClimateAction 100, 2020). The omission in the corporate disclosure of climate change and the potential for climate change to affect companies' bottom line is considered as a threat to stakeholders, especially, shareholders. In the past, shareholders have looked at relatively short-term horizons of financial performance. Nowadays, with the consideration of the long-term investments in assets with lifecycles of 30 years at least, it is an increasing importance for investors to understand their long-term portfolio investment under the multiple climate scenarios, including IPCC scenarios of 2ºC (KPMG, 2020a).

KPMG (2020b) estimates that 56% of the world's 250 largest companies – G250 (by revenue earned) acknowledged climate risk in their financial reporting which increased from 48% in the 2017 report. This indicates that climate change is a financial issue as well as a sustainability issue. The research also shows a 9% increase in the number of G250 companies disclosing carbon reduction targets, from 67% in 2017 to 76% in 2020, mostly from high environmental impact sectors such as automotive, mining and utilities.

In terms of the linking of corporate carbon reduction targets to external climate goals among top 100 companies by revenue in 49 countries in the studies covering both large and mid-cap firms around the world-N100, 55% of N100 companies disclosed their climate change targets which were aligned with the Paris Accord, regional targets and national targets. The most popular climate change target to link to was the global 2ºC above pre-industrial levels target which increased in reporting from 23% of N100 companies in 2017 to 39% of the same group of these companies in 2020. This might

indicate an increasing awareness of the business role in contributing the fair-share efforts to reduce global emissions (KPMG 2020b).

Nevertheless, companies can set the target of net-zero by 2050 and assume that in 30 years' time, technology will be available to mitigate all their emissions. Under this scenario, companies can maintain or even increase their emissions and reduce their intensity target which would not be in line with the goal of the Paris Accord (KPMG, 2020 a, b). Only 17 percent of G250 companies explain the strategy to achieve its climate targets. The strategies include energy-efficiency, capture, and storage or utilisation of carbon emissions. Many of these technologies are still in an early stage of development and their effectiveness is not proved. The level of corporate disclosure in progress towards decarbonization is low. Only 24 percent of G250 companies communicate clearly whether the company is on track to meet its decarbonisation targets. There are some aspects of emissions, such as upstream emissions from supply chains or downstream from the use of products, that are complicated and not easily calculated. However, the higher level of transparency might not reflect good emissions management towards net-zero emissions (KPMG 2020b).

The Carbon Disclosure Project (CDP) surveyed 1839 of the largest international companies (including 57 companies in Australia and New Zealand) (CDP 2016). It found that 85 percent of the sample had already set targets to reduce their GHG emissions. Moreover, 19 percent submitted self-claimed “science-based targets”. A further 40 percent responding are intending to set science-based targets in the next two years.

Nevertheless, the CDP (2019) indicated it is difficult to get a reliable view of whether the companies are on track to meet their climate targets because targets are set for different time periods and companies have often not set or reported progress against

targets for a very long time. Difficulties assessing corporate "environmental performance" are well documented (for example, see Jose and Lee (2007), Van Staden and Hooks (2007) and Dusek and Fukuda (2012)). Low levels of reporting on climate change targets and performance against these may then indicate poor environmental performance, but also may not. It might instead indicate poor reporting behaviours, although it is fair to assume that companies rarely fail to take an opportunity to report good news events.

The frequency and likely the quality of corporate climate change reporting in New Zealand are lacking. The number of New Zealand-based companies that responded to CDP's climate change questionnaire has decreased from 18 in 2016, to 14 in 2017 and to only 13 in 2018 (CDP 2019). Of the 48 New Zealand companies that had CDP scores in 2019, no company was given an A score. There are only eight B companies and 40 with scores below B (in which 36 companies received a score of F, meaning a failure to provide sufficient information to the CDP to be evaluated). This shows that there is a lot of room for New Zealand companies to improve their climate change-related activities and reporting.

With the increasing acceptance of climate change as an important global political, social and business issue, it is clear that New Zealand will continue to respond. Evidence of a response includes the passing of the Climate Change Response (Zero Carbon) Act of 2019, with a target of net zero-carbon by 2050, and the 2017 amendment of the Corporate Governance Code by the New Zealand Exchange (NZX). It is expected that the number of businesses disclosing corporate GHG targets and emissions will continue to increase in New Zealand. Carbon disclosure is thus becoming a de facto standard for large New Zealand businesses.

1.2. Research Aim and Research Questions

Previous studies of corporate environmental targets have predominantly focused on how targets' attributes (e.g., specificity, time horizons, etc.) affect environmental performance (e.g., Ioannou *et al*., 2016); whether different environmental performers disclose different environmental targets (Ioannou *et al*., 2016; Dahlmann *et al*., 2015); and whether environmental targets lead to "sustainability" gains (Haffar & Searcy 2018).

Some companies are setting emissions reductions targets with or without applying science-based principles to the practice of corporate sustainability. They aim to improve (reduce) their environmental impacts with the assumption that in doing so, incremental company-level changes will help contribute to wider national or planetary-level improvements. However, this assumption does not always hold true. For example, some companies in New Zealand set their target to being carbon-neutral by 2030. Carbon neutrality may appear as a positive step toward corporate sustainability at the company level. However, if the company's operations are still contributing to the absolute growth of global emissions through to 2030, presumably because they are not at zero, the company's improvement will have a lesser impact on global climate change targets. Also, though the company is achieving its carbon neutrality goals, global climate change targets are not likely to be met because other companies are not achieving their targets.

This kind of business response indicates that organisations have set their emissions reduction targets in a way that is are unlikely to challenge traditional corporate notions of progress and growth, lacking due consideration for the global ecological context. The ecological context comprises the natural capital which companies depend on for their operations as they extract natural resources and release emissions (McElroy & van Engelen 2012). While the planet has its ecological limits, there remains the perception

that economic growth has no limits (Antonini & Larrinaga 2017). It is necessary to make sure that companies use natural resources only up to a point that allows the Earth to recover and maintain its function, i.e., allowing for ecological resilience (Holling 1973). It is of great importance to keep corporate impacts within the limits of specific global thresholds and to assess corporate performance on this basis.

Despite the growing interest in carbon disclosure, there remains a dearth of research on whether companies are applying the principle of ecological resilience or science-based principles in setting targets. In other words, the actual sense-making of their corporate GHG emissions target setting and reporting is unclear. It is unlikely that measuring and reporting on corporate sustainability performance is enough to drive transformational performance changes (White 2013). Instead, actionable science-based performance targets are needed to drive meaningful, system-wide sustainability changes.

The overall aim of this research is to critically investigate and analyse organisations aspirations and claims for climate change-related management and strategies. By using a mix of documentary and interview-based qualitative methods, I investigate meaning-making of these GHG emissions reductions targets and draw on institutional and legitimacy theory to frame and understand the initiatives that are underway at the 50 largest listed companies on New Zealand Stock Exchange and ultimately, understand the challenge associated with reducing emissions in the near future.

The summary of the research objectives and questions are as follows:

Table 1: The summary of the research objectives and questions

	Research Objectives	Research Questions
1	Identify whether corporate climate change targets are in line with a 2^0C global climate change target	To what extent are the corporate climate change targets science-based targets?
2	Identify corporate identities in adopting climate change mitigation	What are the corporate identities utilised in adopting climate change mitigation?
3	Identify rationales for corporate climate change mitigation, setting and reporting corporate climate change targets	Why are NZ companies mitigating climate change? Why are NZ companies setting and reporting corporate climate change targets?
4	Identify insightful perceptions from corporate managers influencing their corporate emissions reduction target setting and reporting practices	What are NZ company managers willing to do and what are they not willing to do in setting and reporting climate change targets?

I begin by examining whether NZ corporate climate change targets are in line with a 2^oC global climate change target (Objective One). Previous studies have examined a series of climate change target characteristics (e.g., types of target, target scope, target ambitiousness and timeframe) associated with environmental performance. However, it is of great importance to understand the meaningful interpretation of corporate climate change targets. How companies use the concept of ecological threshold (climate change tipping point) to define their targets is not well understood. There have been only a few studies that have qualitatively measured the impact of company targets and policies from the perspective of our planet's ecological system, with the exception of those companies voluntarily reporting on GHG emissions (Whiteman *et al*. 2013). Without agreed upon science-based targets, organisations have no way of determining whether their efforts in

reducing GHG emissions are ultimately contributing to ecological sustainability (Haffar & Searcy 2018).

Secondly, this study will describe the range of corporate identities in adopting climate change mitigation efforts (Objective Two). An organisation's identity comprises the awareness to whom an organisation is related, how an organisation perceives other organisations and how an organisation believes other organisations perceive them (Mead 1934). Indeed, creating and maintaining an image of a powerful and moral organisation can be seen as a legitimation strategy to protect and increase the acceptance as actors in society by managing social perceptions that their actions are appropriate (Suchman 1995). Tregidga *et al*. (2014) concentrate on how organisations have constructed an identity in relation to sustainable development (addressing the question of what it means to represent an organisation as a sustainable one). The paper shows how organisations have maintained a right to speak within the sustainable development debate, despite the fundamental challenges and hegemonic threat that a broader reading of sustainable development might imply. Companies in my sample might articulate some kind of identity with climate change to communicate with their stakeholders who put pressure on companies to change their behaviour and practices, therefore, maintaining "their license to operate" or their legitimacy.

Thirdly, this study explains the rationales behind corporate climate change mitigation, climate change target setting and reporting (Objective Three). It will identify comprehensively the internal motivations (to maintain legitimacy) and external institutional pressures driving forward the corporate climate change mitigation and reporting practices. In particular, it determines factors influencing corporate decisions to implement symbolic or substantive strategies to climate change issues. Symbolic strategy highlights how corporate image and claims to legitimacy are portrayed so companies can

appear consistent with social values and expectations, while substantive strategy seeks to fulfil the expectation of stakeholders (e.g., meeting regulatory requirements) or altering suppliers, resources (e.g., changing from fossil fuel usage to renewable energy) or altering socially institutionalised practices (e.g., setting and achieving science-based climate targets) (Ashforth & Gibbs 1990). Companies can choose more than one strategic response in resolving their legitimacy and institutional pressures. For example, some prior studies emphasised the importance of carbon reporting that not only minimises pollution and environmental harm but also promotes profitability, technological innovation and competitive advantage. These companies show evidence of a radical change in emissions performance indicating changes in substantive environmental management practices (Mol *et al*. 2009, Enkvist *et al*. 2008, Herold *et al*. 2018). On the other hand, other studies' findings indicate the adoption of more easily attainable ("low-hanging fruit") practices (e.g., increasing operational efficiency) without achieving any considerably absolute emissions reductions, which only reflect symbolic actions (Hoffman & Glancy 2006, Schaltegger *et al.* 2019).

Finally, insightful perceptions from corporate managers influencing their corporate emissions reduction strategy, particularly, target setting and reporting practices will be analysed and discussed. Objective Four will identify a range of choices companies can make in deciding what kind of target to implement. With regard to the target type, there is large variation in the nature of the target (absolute target, efficiency target or science-based target) and the level of target and target coverage (emissions scope). Many firms prefer setting intensity targets to absolute targets, let alone science-based targets, as managers are aware of the tension to decouple business growth from the absolute reduction in GHG emissions (Fischer & Springborn 2011, Dahlmann *et al.* 2019). Setting science-based targets might require a great deal of time, financial resources, knowledge

of the target setting process and even require a change to the business model, or to companies' product sales or manufacturing processes. In terms of target coverage, companies might not stretch the scope of targets beyond their direct control which might underestimate their actual emissions. Target ambitiousness requires companies to achieve the improvement of their environmental performance beyond a business-as-usual approach and benchmarking against the best practices in the relevant industry sector. Target ambitiousness is believed to reflect substantive intentions to reduce emissions (Spitzeck 2009). Without science-based target setting, companies might choose to set more symbolic targets which could both give an impression of caring about climate change while largely continuing with business-as-usual (Lyon & Maxwell 2011, Lyon & Montgomery 2015, Dahlmann *et al.* 2019). This study will provide policymakers with additional insight into what motivates companies to not only set climate change targets but also to take "beyond business-as-usual" action to reduce their environmental impact from their operations. This will ultimately enhance climate policy and other forms of corporate regulation.

1.3. Outline of this Thesis

Following the introduction in Chapter One, Chapter Two will draw on the literature from the fields of environmental management, corporate social responsibility, and climate change which characterise how organisations respond to complex environmental issues and attempt to explain variation in corporate behaviour in setting emissions reduction targets. The chapter will then continue with an exploration of the factors which influence why firms set climate change-related targets. Extensive research has shown that there is a wide variety of contexts and a range of different motivations that can influence corporate emissions target setting. Chapter Two serves to examine the theoretical foundations for why there is such variation in organisational response to climate change

in general and climate-related target setting in particular. The planetary boundaries principle, which offers a scientifically based fair share of total GHG emissions reductions companies would be required to meet, is then selected to better understand the firms' initiatives, impediments and limitations.

Chapter Three provides the theoretical framework for this thesis. That chapter introduces a range of theoretical approaches to narrative research and discusses the analytical strategy which will be applied to this study. Institutional theory and legitimacy theory are used to frame and understand the sense-making of corporate emissions targets which help to shed light on the motivations behind organisational climate change responses.

In analysing the range of corporate responses to climate change in New Zealand, it is important to understand the international context, New Zealand's national policy and New Zealand's Emissions Trading Scheme (ETS). Chapter Four provides a review of New Zealand's GHG Profile and the New Zealand Emissions Trading scheme details of ETS policies and regulations, carbon tax vs ETS, use of international carbon units, phase-down of industrial free allocation and carbon prices; and also New Zealand's emissions reduction targets. This provides an important foundation for understanding the uniqueness and complexity of issues that climate change presents to New Zealand and how this has influences on the corporate opinion of emissions reduction target setting regulations.

Chapter Five describes the methodological approach used from the data collection stage to the analysis for the research. This includes a mix of documentary methods (content analysis and discourse analysis) and interview-based qualitative methods which help to facilitate knowledge development focussed on corporate climate-related target setting and its application through context-dependent provisions. This mix of approaches offers

the potential to investigate the importance of climate change issues and targets setting to business in greater depth. A description of how organisations and participants were recruited and the interview process are also included. The process for identifying the key themes emerging from the narratives is described as well as how the narratives were subsequently analysed with respect to those themes, drawing on the theoretical concepts introduced in Chapter Two and Chapter Three.

Chapter Six, Seven, and Eight present the empirical findings. In Chapter Six, the research question exploring the quality of corporate climate-related reporting, the corporate identities in mitigating climate change and the extent to which the corporate targets are in line with 2^{o}C are addressed. Chapter Seven provides an analysis of the predominant and effectual themes related to rationales for corporate climate change which emerged from both the documentary and interview processes. In Chapter Eight, corporate climate change target setting was examined by analysing the texts that organisations provided which are related to targets. Analysis of the interviews with senior managers within the NZX listed companies reveals themes and provides rationales for setting climate change targets, specifics of setting targets, details of the nature of targets, level of targets and target boundaries.

Chapter Nine presents a discussion of the findings in the context of the literature and theories presented in earlier chapters. It more specifically draws on institutional and legitimacy theory to frame and understand the initiatives that are underway at the largest NZX listed 50 companies and ultimately, determine factors influencing corporate decisions to implement a substantive or symbolic strategic approach in setting and reporting climate change target performance as well as how the organisations respond to the challenges associated with reducing emissions in the near future.

The final chapter of the thesis reflects upon the project and provides a summary of its main findings. It also acknowledges the research limitations along with identifying the contributions made to the literature and provides opportunities for future research.

CHAPTER 2 – LITERATURE REVIEW

2.1. Introduction

This chapter provides a focused outline of the literature in relation to corporate carbon strategies, disclosure, emissions reduction target setting, and reporting. Drawing on literature from the fields of corporate environmental management in general, and corporate climate change responses and corporate emissions reduction target setting in particular, organisations' responses to climate change issues are characterised. It is important to note that the focus of this thesis is corporate emissions management and reduction, target-setting and reporting, rather than a focus on corporate sustainability or environmental management in general. This is despite the possibility that there might be relevant literature from a corporate sustainability development perspective.

The chapter attempts to explain the adoption of symbolic and substantive corporate climate change mitigation and disclosure strategies. Factors by which variation in organisational responses to environmental issues, and climate change in particular, are influenced will be explored. This chapter will then continue with an exploration of the relationships between the level of environmental impact and the level of corporate disclosure. These variables will be used to explain the divergence in corporate reporting practices and the underlying motives or drivers for variations amongst them.

Arguably, it is difficult to get a reliable view of the meaningful interpretation of corporate climate change target disclosures and also, to gauge whether the companies are on track to meet their environmental targets. Targets are set for different periods, based on different base years and base year emissions. Therefore, a thorough discussion of the ecological sustainability and planetary boundaries concepts may identify the actual corporate efforts in mitigating climate change. Previous research (Haffar & Searcy 2018,

Whiteman *et al.* 2013) conducted overseas (Canada and USA) will be used to extend the literature with this New Zealand based study.

In Section 2.2, the symbolic and substantive strategies utilised in managing corporate greenhouse gas emissions and a discussion of how the adoption of specific environmental management approaches can lead to a radical change in emissions performance are first considered. Then, an examination of the relationships between carbon disclosure and carbon performance is provided. In Section 2.3, the related area of corporate emissions reduction target setting and reporting will be discussed by identifying the three most prominent reasons why corporations set emissions reduction targets. The specificity and ambitiousness in target setting along with the relationships between target setting and carbon reduction are then discussed. The effectiveness of target setting is shown to be lacking, as the ambitiousness and specificity of targets are ambiguously defined. From these gaps, planetary boundaries and science-based target setting is shown to make a contribution to the knowledge of setting corporate emissions reduction targets. Next, Section 2.4 overviews a perceived legitimacy gap in corporate behaviour. A summary of the chapter is provided in Section 2.5.

2.2. Corporate Climate Change Strategies, Performance, and Disclosure

2.2.1. Symbolic Strategies vs Substantive Strategies

McDonnell & Bartlett (2009) assert that stakeholders now have heightened concerns and changed social expectations about the impacts of corporate carbon footprints. Enkvist *et al.* (2008) note that many companies consider climate change strategy to be a crucial component of business practice for their competitive benefit. Businesses understand that it is now important to respond to stakeholder pressures by constraining their GHG

emissions impact and disclosing performance on a voluntary basis (Pinkse & Busch 2013). Corporations need to convince stakeholders that they are responding and taking appropriate actions to address the problem. However, there is tension between stakeholders' expectations and corporate preferences. This appears to result from the common belief that regulations are not sufficiently strict while corporate leaders prefer norms that are more aligned with current business realities (Deegan & Rankin 1999). This potentially creates an expectations gap.

Haque *et al.* (2016) investigated an expectation gap between what information stakeholders expect and what Australian corporations disclose. They found a low level of carbon-related information disclosure, suggesting this is likely due to some factors. First, is a lack of proactive engagement with stakeholders undertaken by the company. Second, is a lack of incentives for corporate managers maintaining transparency because of the overload of the commercial nature of the information. Third, managers believe that the importance of corporate profits and financial performance outweighs the issue of climate change. And forth, there is no pressure coming from Government to address climate change even though Government was considered to be a powerful stakeholder.

In order to maintain their social contract, organisations take either symbolic or substantive action. Symbolic strategies represent corporate climate change disclosure intending to create a positive impression without necessarily accompanying changes in operations. By contrast, companies that undertake substantive strategies change their operations and are more consistent with social expectations (Hrasky 2012).

Carbon practices could contribute to their competitive advantage as part of a differentiation strategy (Schultz & Williamson 2005). For example, low-carbon products and services attract customers and signal social responsibility in order to differentiate

companies from their competitors. This also puts pressure on competitors to commit to the carbon norms once they have been accepted as the industry standard (Pinkse & Busch 2013).

There is a dominant message from and to industries that environmental protection, and environmental investments in particular, bring financial benefits to organisations, for example through financial returns in savings in fuel and water supply costs. One of the reasons why companies take actions to mitigate climate change is because of competitive advantage. Environmental goals can be tied to tangible benefits or costs reductions, and allow for comparisons of performance to competitors. By improving the efficiency of operation processes, companies could simultaneously reduce their costs and improve their environmental performance (Lyon & Maxwell 1999).

Bansal & Roth (2000) also found that companies can improve their reputation, operation efficiencies and product reliability, and therefore, build long-term profits. Companies could enhance their market positions by undertaking ecological innovations for their manufacturing processes, products and services, and they improve their corporate environmental reputations by engaging in more visible activities. These companies also find it easier to attract high-quality employees resulting from an enhanced reputation.

Conversely, corporate management can actively communicate its carbon targets and set a pathway toward decarbonisation in order to create corporate recognition without any substantive organisational change (Hoffman and Glancy 2006, Margolick & Russell 2001, Kolk & Pinkse 2008). For example, a time frame of several decades is considered meaningless because there are too many uncertainties. It is possible that the technology to accomplish a low carbon future is not yet available on a commercial scale. These wait-and-see strategies might also mean that companies do not have any intention of radically

changing their current business practices anytime soon. Therefore, actual emissions reductions might not take place (Lovell *et al*. 2009).

Liu & Yang's (2018) research investigated the quality of GHG disclosure of the 25 largest listed companies in the UK FTSE 100 in the resource extractive industries such as utilities, mining and energy from 2004 and 2012 and how these companies responded to the launch of the European Emissions Trading Scheme and the UK Climate Change Act. The authors found that there was significant evidence that among those companies within similar GHG exposure groups, companies tended to imitate the one that was perceived to be successfully legitimate. This explains a continuous improvement in corporate GHG emissions disclosure.

Kim *et al.* (2007) investigated the efficacy of symbolic versus substantive approaches in improving reputation in the sample of US corporations facing chemical pollution issues. They found the substantive approach to be more effective than the symbolic approach in managing perceptions. The symbolic approach, however, may not be effective for highly environmentally sensitive companies whilst it might be effective for those in less intensive industries (Marshall & Brown 2003). O'Dwyer (2002) investigated managerial perceptions in disclosing corporate environmental information in Irish companies. He found that presenting a symbolic interest in the natural world is the main motivation in corporate managerial perspectives.

Hrasky (2012) categorised three different symbolic climate change disclosure approaches and three substantial disclosure approaches. For the symbolic approaches, the first category conceptualises normative statements with adopted intentions about the relevant issues without providing any specific actions. The second introduces targets or objectives statements but are unsupported by providing any specific actions. The third disclosure

category where companies present statements disclosing rewards and other forms of recognition received with respect to climate change.

For the substantial approach, the first category represents the internal initiatives focused on corporate carbon footprint reduction. The second category may be viewed as the presentation of involvement in external initiatives to achieve emissions reduction. The third category is the provision of groups' statements that indicate corporate actions are helping to reduce the carbon footprint of others. Hrasky's (2012) findings show that disclosure by companies in less carbon-intensive sectors tends to be symbolic, as perhaps there is little motivation to take substantive action to reduce their carbon footprint. In contrast, corporate disclosure in carbon-intensive sectors tends to emphasise achievements and procedures that aim at reducing GHG emissions. However, it is noteworthy that disclosure appearing to focus on substantive action might not result in actual changes within the organisation (Milne & Patten 2002).

Herold *et al.* (2018) categorised four different types of carbon disclosure strategies based on the dimensions of logic centrality and stakeholder salience. Logic centrality indicates the level to which climate change logic is important to an organisation. It shows how the value and importance of climate change are ranked by top corporate managers and how it is communicated and shared by staff and managers in order to achieve environmental targets. Stakeholder salience reflects the extent to which the priority of carbon-related information reporting is given. In other words, it aims to minimize the gap between corporate GHG emissions information as disclosed and external stakeholders' expectations.

Figure 1: Four different types of carbon disclosure strategies

Degree of centrality	**High** Sustainability logic is core to organisational functioning	**Substantial** Cost-efficiency-driven	**Transparent** Legitimacy-driven
	Low Market logic is core to organisational functioning, the sustainability logic is peripheral	**Symbolic** Rhetoric-driven	**Engaged** Stakeholder-Driven
		Low Stakeholders claims for a sustainability logic can be neglected	**High** Stakeholders claims for a sustainability logic are given priority
		Degree of Salience	

Source: Herold *et al.* (2018, p.84)

Substantial disclosure is based on the assumption that climate change values will be largely shared by all staff members but are likely to be inconsistent with demands from stakeholders. These activities reflect corporate actions reducing GHG emissions in line with cost reductions that result from enhancing operational efficiency, mainly expressed as energy-efficiency (Hörisch *et al*. 2015, Busch & Schwarzkopf 2013). Hoffman (2006) suggested that operational efficiency reflects corporate low-hanging fruit actions, i.e., low cost and low risk actions without achieving any considerable absolute emissions reduction.

Symbolic disclosure represents low centrality and low salience, which reflect rhetorical statements creating an impression of environmental responsibility. It is a strategic option that can be named as window- dressing (Oliver 1991). Companies may claim carbon-related achievements that are not associated with their actual corporate action (Hörisch *et al.* 2015).

Transparent disclosure embodies a high degree of relevance of climate change to a company's functioning and also stakeholders' claim for full carbon disclosure. The corporate response not only reflects actions to make climate-related information accountable to stakeholders following international guidelines (such as GRI, ISO 14064 standard) but is also driven by beyond business-as-usual/ beyond efficiency initiatives. It also reflects climate change values within the company due to the importance of climate change to the organisation.

Engaged disclosure indicates minimal corporate actions directed to climate change mitigation and more active promotion of their own interest. This is indicated by low centrality and high salience. That configuration might lead to a gap between stakeholders' expectations and corporate actions to address climate change, as stakeholder demands in accountability regarding carbon emissions increases. Damert *et al.* (2017) also found a climate change strategy in an engaged automotive organisation which shows their strategy represents a reputational focus rather than on compliance issues.

Dahlmann *et al.* (2019) investigated the importance of corporate climate change targets in shaping emissions performance in a sample of over 1000 global companies in the Carbon Disclosure Project (CDP). They contrasted two different approaches for setting emissions reduction targets: the symbolic approach by managing external stakeholder perceptions via greenwashing, and substantive approaches to improve emissions performance based on attribution factors of corporate targets such as extent, forms and time horizons. Their findings showed no significant relationship in setting climate change targets on emissions. However, a commitment to more ambitious reductions, a longer timeframe and absolute reductions were accompanied by a greater amount of GHG emissions reduction.

Jaworska (2018) investigated reports on climate change in corporate social responsibility and environmental information released by large oil corporations over a period of 14 years from 2000 to 2013. She found that companies with the closest links to political parties communicate the strongest commitment to climate change. However, these organisations tend to postpone their actions for the future or pass their responsibilities to other stakeholders in order to communicate that we are facing the challenge together. Jaworska concludes that solutions to ecological problems (i.e., improving the technology of carbon capture) do not involve any radical change to current practices and therefore allow the organisations to carry on with business-as-usual. In other words, a rhetorical means of discursive grooming is used strategically as impression management.

On the other hand, prior research focused specifically on the adoption of specific environmental management practices shows a radical change in emissions performance (Hoffman & Glancy 2006, Pinkse & Kolk 2007, Boiral *et al.* 2012). Findings vary, as some studies show the presence of an actual influence of environmental management practices on corporate environmental performance (Teng *et al.* 2014), whereas other researchers dismiss such positive impacts and view them as greenwashing adopted for legitimisation without any actual change (Greer & Bruno 1998, Doda *et al.* 2016).

Doda *et al.* (2016) used the CDP data of 582 corporations released during 2009 and 2010 to propose explanations for sub-optimal outcomes. These appear to be due to (1) the issues companies selected and events to report, corporate carbon management practices, and GHG emissions data that might not be complete and consistent, leading to stakeholder difficulties in assessing and monitoring performance progress; (2) a delay between the application of corporate carbon management practices and their impact on emissions performance; (3) implementation outcomes where large companies did not

create sufficient impact as they did not place satisfactory emphasis on performance or outcome in carbon management initiatives.

In summary, only a few motivations for corporate climate change response such as stakeholder pressures, competitive advantage, reputation, improvement in operational efficiency and therefore, greater financial returns are justified in the relevant literature. In order to maintain corporate legitimacy, corporations take either a symbolic or a substantive approach to mitigating climate change. The section explored factors in which variation in organisational climate change practice occur. The next section will look at the relationships between environmental performance and environmental disclosure as well as carbon performance and carbon disclosure.

2.2.2. Relationships between environmental/ carbon disclosure and environmental/ carbon performance

The environmental disclosure literature includes examination of the relationship between the level of environmental impacts and the level of corporate disclosure. Companies with high environmental impact are characterized by their association with the greatest regulatory pressure and most likely to be aware of public concerns that would threaten their legitimacy. Consistent with legitimacy theory, they thus make more effort in disclosing more environmental information to a range of stakeholders, (see De Villers & van Standen 2006). This is likely to be in order to avoid criticism from pressure groups and society (Patten 1991) and also to promote a more positive image for members of the industry (Peck & Sinding 2003).

In addition, the quality of voluntarily disclosed corporate environmental information is driven by the nature of their prevailing stakeholder environment. Thus, firms that face

more environmentally concerned stakeholders would be expected to report with higher quality information (see Sinclair-Desgagne & Gozlan 2003, Brammer & Pavelin 2008).

Moreover, Cho *et al.* (2010) and Deegan & Gordon (1996) found that the worst environmental performers focus on reporting good news and attributing positive performance to themselves in an attempt to manage stakeholder impressions of their corporate environmental performance. These findings are consistent with managerial impression management theory, which suggests that poorer performers will prefer to emphasise good news, obscure bad news, and slant attributions of performance to their advantage (also see Bansal & Clelland 2004).

However, there is countervailing evidence. Patten (2002) found that firms from less environmentally intensive industries show a greater amount of disclosure for higher levels of their Toxic Release Inventories. He explained that insufficient environmental performance data may result in inconsistent results of the disclosure level. Campbell *et al.* (2003) note that the level of social disclosure in corporate annual reports varies between companies and sectors. More particularly, companies with a negative reputation in society may be expected to disclose more. However, they might not always do so for at least four possible reasons. First, companies may not think that enhanced disclosure could close the legitimacy gap. Second, such companies might be aware of different legitimacy gap levels that result in different amounts of social disclosure. Third, disclosure might be seen as ineffective and therefore, unnecessary. Finally, if companies consider stakeholders to be less important, they will ignore their concerns or just undertake symbolic communication without the support of real changes.

Prior studies have emphasized the importance of carbon reporting that not only minimize pollution and environmental harm but also promote profitability, technological

innovation and competitive advantage (Mol *et al.* 2009). Based on the assumption that behavioural change will occur, corporate performance will be improved because reporting will encourage them to develop a deeper understanding of climate change-related topics. Tang & Demeritt (2018) examined the rationale for and impacts of carbon reporting by 176 large firms listed in the FTSE 100 that are subjected to the UK Government's Adaptation Reporting Power, exercised by the UK Department for Environment, Food and Rural Affairs under the Climate Change Act 2008. Financial gain, reputation and regulation compliance are emphasized as the main reasons for companies engaged in the mandatory carbon disclosure. Energy-intensive and economically regulated companies were found to have more economic and regulatory incentives to provide more comprehensive carbon disclosure as they use the information both to gain profit and make them favourable with regulators. However, the findings also show limited evidence of carbon disclosure driving substantial reductions in emissions.

Aragon-Correa *et al.* (2016) suggested that domestic firms have moved their manufacturing factories to countries with lower levels of environmental regulations and standards in order to retain competitiveness. Their research compared the environmental performance and level of reporting of 100 most international non-financial firms to those of 16,023 firms in their industries. They found that the top international firms have better environmental reporting even though they have poorer environmental performance than their counterparts. This suggests that these international firms only adopt voluntary disclosure for the purpose of legitimation of their environmental activities.

In contrast, Qian & Schaltegger (2017) address the research question of how changes in carbon emissions disclosure may lead to subsequent changes in performance over time. Using the CDP carbon emissions information for the Global Fortune 500 companies released during 2008 and 2012, the study found that there is a positive relationship

between change in carbon disclosure levels and subsequent change in carbon performance of direct emissions intensity (Scope 1 emission per thousand US dollars of sales revenue earned each year). The results imply that the improvement of carbon reporting subsequently leads to a change and improvement of carbon performance because it generates outside-in opportunity. This means that carbon disclosure is a way to motivate the organisation to further improve performance, and therefore, stimulate performance change for middle management and employees. However, the study identifies a relatively weak association between changes in carbon disclosure and performance in energy-intensive companies.

The research of Belkhir *et al.* (2017) examined the relationship between Global Reporting Initiative (GRI) reporting and carbon emissions performance by comparing the carbon dioxide emissions data from 40 GRI reporting companies with 24 non-GRI reporting entities over a period of six years in five industry sectors. They found that while the GRI group had a 6 percent increase in absolute emissions and a decrease of 15 percent in emissions intensity, the non-GRI reporters had a decrease of 3 percent and 17 percent in absolute emissions and intensity emissions, respectively. This implies that GRI reporting has no direct relationship with emissions performance. Furthermore, only a very limited number of sampled GRI reporters disclose their carbon data in relation to national or global targets. The disclosed information thus seems to be meaningless, as stakeholders would not be able to effectively assess in practice how much the individual impact contributes to the overall national and global ecological performance.

Table 2: The Relationship between Environmental Performance and Disclosure among Multinational Firms

		Environmental Performance	
		High	**Low**
Environmental disclosure	**High**	Strategic environmental leadership	Legitimation of existing practices
	Low	Quiet environmental leadership	Pollution haven

Source: Aragon-Correa *et al.* (2016, p. 28)

Aragon-Correa *et al.* (2016) proposed four different types of multinational firms based on the dimensions of their environmental disclosure and environmental performance level. The strategic environmental leadership type relies on the assumption that corporate performance and disclosure are both high. This strategy helps companies to achieve both reputational and competitive advantage. The quiet environmental leadership strategy means that the corporate performance may be high but corporate environmental disclosure is low. In this case, the reason why a company might choose to be quiet may be in not wanting to attract attention from external parties. The legitimation of existing approaches is demonstrated by the shortfall in performance while being high in environmental disclosure. In other words, disclosure has taken place without a concurrent improvement in environmental performance. The last type of relationship, pollution haven, may be triggered by the undesired association of environmental pollution via trading arrangements with countries with less demanding environmental regulations. Such companies tend to keep to low environmental disclosure. In their research, the authors found evidence to support the idea that the top international firms have pursued a legitimation strategy as opposed to the other options of strategic environmental leadership, quite environmental leadership, and pollution haven. Aragon-Correa *et al.* (2016) found no evidence of better performance among firms that have higher levels of transparency.

To summarise, this section has described company characteristics and the links to their level of their corporate disclosure. Factors relevant to disclosure such as the level of environmental impact, economic and regulatory incentives were presented. It is thought that the improvement in carbon reporting subsequently leads to an improvement in carbon performance. Arguably, however, without science-based target setting, it is meaningless for stakeholders to effectively assess corporate impact and how it keeps track with national and global ecological performance. An overview of corporate climate change target setting and reporting is now undertaken, including environmental target setting in general, the effectiveness of target setting and planetary boundaries and science-based target setting and achievements of targets in the literature.

2.3. Corporate Climate Change Target Setting and Reporting

Corporate climate change targets are supposedly set to achieve actual reductions in greenhouse gas emissions. This section provides a discussion of the reasons why corporations set their environmental targets, the extent to which corporations set ambitious targets, the relationship between target setting and carbon performance, the effectiveness of target setting and planetary boundaries, and science-based target setting, as well as achievement of corporate targets.

2.3.1. Environmental Target Setting (In General)

2.3.1.1. Reasons why corporations set environmental targets

There are many reasons why a company sets environmental targets. The first is often strategic. Corporate manager's direct actions rationally to gain competitive advantage such as increasing market share, lowering costs associated with waste disposal, gaining greater energy efficiency and reducing clean-up liabilities. Environmental targets are set in line with economic benefits or goals in improving performance against competitors.

This creates a win-win situation, as companies improve both their environmental performance and bottom line (Lyon & Maxwell 1999).

Chen *et al*. (2015) found that corporate financial performance could be improved as a result of setting specific environmental targets associated with more innovative products. Some studies have established the relationship between environmental performance and financial performance. For example, Porter & Van der Linde (1995) suggested the avoidance of future liabilities from regulations may generate cost savings. Konar & Cohen (2001) discovered a negative correlation between environmental performance and the intangible asset value of firms. Ioannou *et al.* (2016) determined that firms in high polluting industries (such as automobiles and components, capital goods, energy, materials, transportation, and utilities) set more ambitious targets than firms in low polluting industries because of the financial significance of carbon emissions reductions. It is clear from these studies that setting appropriate environmental targets might contribute to improvements in environmental performance, and in turn, to enhancement of corporate financial performance.

The second important reason companies set environmental targets is a result of stakeholders' pressures. Companies need to prepare for upcoming environmental influences. A motive of legitimation refers to "the desire of a firm to improve the appropriateness of its actions within an established set of regulations, norms, values, or beliefs" (Suchman 1995, p.574). Threats to their legitimacy are believed to be a risk to a firm's license to operate or its long-term survival. Ransom & Lober (1999) note that appropriate environmental goals are important for the corporation's survival. In order to close a legitimacy gap, Bansal & Roth (2000) advocated adopting legitimation strategies such as observably ensuring compliance with legislation, developing a network with local communities, carrying out environmental audits, undertaking measurement on

corporate environmental impacts, and aligning the corporate image with solutions to environmental issues.

Institutional theory suggests that firms tend to imitate the actions of other firms within a similar exposure group, e.g., competitors that have attained success in similar fields. Such a strategy can entail many potential benefits in the form of more stable, less risky operations and enhanced legitimacy (Ransom & Lober, 1999). Similarly, stakeholder management theory suggests that firms respond to a variety of external and internal stakeholders. When the firms' dependence on these stakeholders is significant enough, they set goals in excess of explicit expectations to increase the stakeholders' satisfaction.

For many ethically motivated companies, setting environmental targets is motivated by "doing the right thing" with regard to environmental issues. Top management team members (Winn 1995) and company values (Buchholz 1993) are cornerstone factors in encouraging companies to evaluate their role in society. This is consistent with Bansal & Roth's (2000) study that examined the reasons why firms undertook particular ecological responses. The decision process was often based on the values of powerful individuals or on organizational values that saw effective ecological responses as crucial. As a result, instead of mimicking other companies, many chose to undertake independent and innovative courses of action.

Locke & Latham (1990, p.58) note that "target setting is a fundamental component of human behaviour: targets are expressions of values, needs, motives, direct behaviour and performance at both the individual and group levels". Therefore, environmental target setting could contribute to achieving top managers' values and the corporation's values.

Bansal & Roth (2000) emphasised that values can influence a firm's ecological responses in three important ways. First, values help corporate managers to determine important

and relevant issues (Daft & Weick 1984) from those of lesser significance. Second, stressing environmental values can persuade some managers and staff to consider environmental responses as crucial (Lawrence & Morell 1995). Third, powerful members might willingly change manufacturing operations, products, and processes if these fit with their own personal values (Stead & Stead 1995).

Gunningham *et al.* (2003), Spitzeck (2009) specified four types of beyond compliance environmental protection measures that could be undertaken by business firms: (1) Win-win measures through which companies can both reduce environmental impact and increase their profits due to reduction in expenditures, such as by more efficient storage or treatment of chemical and other waste products, or more efficient or new production equipment releasing lower levels of pollutants; (2) Margin of safety measures leading to beyond compliance with current regulations results in order to ensure that if breakdowns occur, incidents would not result in serious violation of policies or laws; (3) Anticipatory compliance where a firm makes a number of specific increases in compliance with regulatory requirements where it can be more economical to make changes today rather than tomorrow; (4) Good citizenship measures going beyond existing regulatory requirements, where it is believed that making actual change will lead to business improvement in the long run, not just on enhancing profitability.

Companies can benefit from setting environmental targets and reporting environmental performance against these targets. It is therefore crucial for companies to select environmental targets carefully and rigorously.

2.3.1.2. To what extent do corporations set specific and ambitious targets?

Voluntary disclosure of environmental information is related to better access to finance as well as a lower cost of capital (e.g., Dhaliwal *et al.* 2011, Ioannou & Serafeim 2012). Some research focused on reasons why firms disclose environmental targets and performance outcomes (e.g., Clarkson *et al.* 2011, Ioannou & Serafeim 2012).

Locke & Latham (1999, 2012) suggested that target difficulty is positively correlated with organisational performance because it creates direct attention to relevant activities. Therefore, having a difficult target increases effort and leads to discovery and use of task-relevant knowledge and strategies. Ioannou *et al.* (2016) found that firms in high polluting industries (such as automobiles and components, capital goods, energy, materials, transportation, and utilities) set more arduous targets than firms in low polluting industries because of the economic significance of carbon emissions reductions.

Ioannou *et al.* (2016) also found that target difficulty matters more for projects that require novel knowledge (e.g., process efficiency and low carbon energy) as opposed to projects requiring more investments to achieve a change (e.g., transportation and buildings). This is attributed to a likely persistent and prolonged effort as well as encouragement, discovery, and use of task-relevant knowledge and strategies (Wood & Locke 1990). Other researchers, however, argue that very difficult targets can impose significant pressure or anxiety, which in turn, may diminish their ability to engage in production efficiencies (e.g., Webb *et al.* 2013).

Barsky (2008) pointed out that difficult and specific goals could increase the likelihood of unethical behaviour. This potential is related to the specificity and difficulty of achieving these goals, where specificity is the degree of quantitative precision with which the goal is specified while difficulty is the degree of proficiency or level of performance

sought (Locke *et al.* 1981, Austin & Vancouver 1996). For example, in the case of Volkswagen, with the target of "by 2018 [becoming] the world's most profitable, fascinating and sustainable automobile manufacturer", they would sell ten million vehicles per year, have a pre-tax profit margin of at least 8% and would have the most satisfied employees and customers in the automobile industry. However, in September 2015, the auto manufacturer had been caught having installed defective devices which turned on emissions controls only whilst a car was being driven under emissions test conditions. These devices switched off during normal driving, meaning that performance improved at the cost of releasing up to 40 times more nitrous oxide (Environmental Protection Authority 2014). The company's sustainability commitment indicated their ambition to be a leader in the production of eco-friendly vehicles. However, the accusation of fraud and its investigation by authorities signalled that the company's behaviour went in the opposite direction to their leadership statement. The discrepancy between ambitious commitments in corporate sustainability reports and actual actions of the organisation highlights the degree of greenwashing involved (Siano *et al*. 2017).

The level of target difficulty is arguably positively linked with organisational emissions reduction because it requires prolonged efforts and more investment to achieve a change. On the other hand, the unethical corporate behaviour to achieve the difficult target might occur because of pressure which might diminish the corporate ability to gain actual efficiency and therefore, improvement of environmental performance.

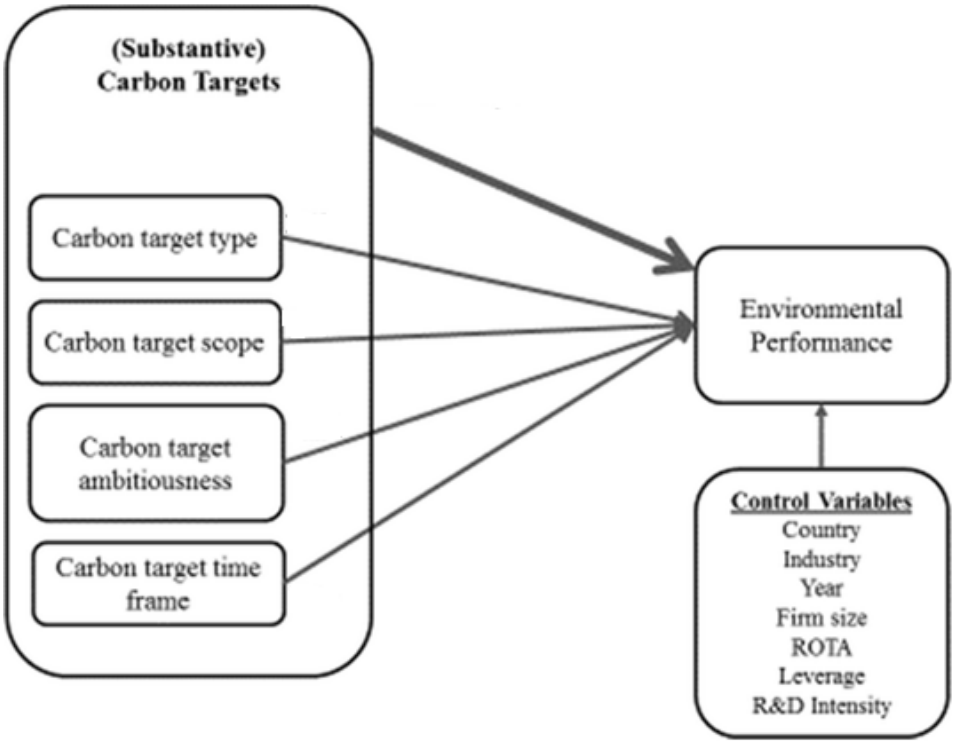
2.3.1.3. Relationships between target setting and carbon reduction

Corporate climate change targets could provide firms with not only financial benefits but also improve their environmental performance (Bansal 2003, Sharma 2000). Targets help companies focus on cognitive, managerial and motivational processes that encourage them to work toward their accomplishment which, in return, stimulate changes in

behaviour within the company (Locke & Latham 2009). Ultimately, if significant, these changes could enhance their reputation among stakeholders (Dahlmann *et al.* 2019).

Dahlmann *et al.* (2019) proposed four different attributes of a substantive approach in setting climate change targets: target type (absolute vs intensity target); target scope (broad vs narrow); target ambitiousness (scale of emissions reductions target – the size of the emissions percentage to be reduced); and target time frame. These attributes and their hypothetical relationships to performance are graphically presented in Figure 2.

Figure 2: Attributes of a substantive approach in setting carbon targets



Source: Dahlmann *et al.* (2019)

The authors distinguish two intentions for setting emissions reduction targets: a symbolic communication approach and a substantive commitment to reducing environmental impacts. The findings show no relationship between the presence of corporate emissions reduction targets and environmental performance improvement. However, only substantive targets are associated with reductions in climate change impact which are

identifiable by target characteristics. More particularly, only absolute reduction targets were linked with a measurable reduction in GHG emissions rather than intensity targets, which suggest that the unambiguous absolute targets are instrumental in significantly reducing emissions.

In terms of target scope, there is no significant evidence to support the contention that scope is considered to be important in achieving emissions reductions, thus suggesting that target scope is seemingly a symbolic choice. Ultimately, Dahlmann *et al.* (2019) found that ambitious targets with a greater percentage of emissions reductions are correlated with environmental improvement outcomes. These findings are consistent with Ioannou *et al.* 2016. Finally, the authors found a relationship between target time frames and environmental performance. In other words, a significant change in performance will require alterations in business models and practices that are likely to form over a longer time period. Companies found that an average 7.5 years is considered as an effective target frame for companies to achieve their environmental improvement outcomes.

Sullivan & Gouldson (2013) investigated the case of the British supermarket sector in regard to their voluntary commitments to set corporate climate change targets. They found that the main reason for setting corporate emissions targets was a business case focusing on cost reduction and financial benefits. These efforts included investments in energy efficiency, taking actions that reduce suppliers' costs, and the development of products and services to create new business opportunities. The authors also pointed out that many retailers set a relative intensity target rather than setting one in absolute terms, i.e., an energy efficiency gain or a reduction in greenhouse gas emissions intensity.

The authors interviewed corporate managers and found tensions to decouple business growth with absolute greenhouse gas emissions because emissions reductions require

firms to change their business models. It seems to be challenging for companies to ensure the efficiency and intensity gains outweigh the increase in emissions associated with business growth. They also found that many of these targets are short-term, raising the question of how performance is expected to change over a longer period of time. Rockström *et al.* (2009) argue that in order to limit global warming to less than 2^{o}C by the end of this century, our global emissions must peak by 2020 and we need to halve our emissions every decade for the next three decades. In terms of quantifiability and comparability, we can compare companies' targets to the potentially more demanding "science-based emissions reduction targets" to see whether company targets fall short, match, or exceed their expected annual emissions reductions.

Dahlmann *et al.* (2015) examined the relationship between the setting of aspirational corporate environmental targets and their impact on organisational environmental performance. Goal stretching is determined by annualised emissions reductions targets both for absolute and intensity targets (%) and is calculated by emissions reduction target (%)/(target year-base year). Based on CDP data for over 1000 international firms, the authors found that companies with significantly high levels of emissions are most likely to set environmental targets. Further findings show that prior financial performance does not appear to be a key factor in determining whether firms will seek to reduce their environmental impact but does have an effect on their environmental visibility. However, the findings strongly support the assertion that companies set stretched environmental goals in order to reduce their emissions. Stretching goals appear to be the most implemented strategy by big emitters that is also associated with a high level of R&D investment. This suggests that companies which invest heavily have the internal capabilities for innovation that can reduce their greenhouse gas emissions. This finding contrasts with those of Ioannou *et al.* (2015) who found that those firms with higher

levels of carbon emissions will set lower emissions reduction targets, as it is more challenging for them to make complex changes in their organisational policy and processes, let alone business model. The companies sampled set targets for the purposes of internal decision making and performance improvements. Therefore, there is no evidence showing that environmental targets would be used as symbolic signals or greenwash.

Ioannou *et al.* (2015) also used CDP data to explore how target difficulty affects the level of target accomplishment. They measured target difficulty by calculating the percentage target reduction in carbon emissions over the target horizon, subsequently showing that target difficulty has a positive correlation with the degree of target completion. More specifically, more difficult targets would be set by companies in which (1) target setting occurred over a longer timeframe, giving extra time to achieve the target; (2) they had larger capital investment in projects that aimed to reduce carbon emissions. This result is also consistent with Dahlmann *et al.* (2019)'s finding that confirms the positive relationships between ambitious targets, longer time frames and absolute reductions in corporate emissions.

Rietbergen *et al.* (2015) studied the process of setting emissions targets in the CO_2 Performance Ladder, a certified scheme for energy management and GHG reporting adopted by several Dutch public listed companies in the building construction industry. Their findings show that the majority of companies in their sample preferred intensity targets because it allows them to increase their total CO_2 emissions. Although the scheme requires companies to set significant emissions reduction targets, the term "significance" can be interpreted differently by different stakeholders. In addition, the significant emissions reduction target setting is often based on policy objectives rather than science-based target setting. The achievement of these corporate emissions reduction targets

ultimately did not require considerable effort. Companies could still take low-hanging fruit actions to achieve energy savings, hence reducing their costs.

Some attributes of carbon target setting approach are considered to have an influence on environmental performance. These include target type, target scope, target difficulty and target timeframe. These factors will be considered in this study to investigate organisational intentions in selecting a symbolic or substantive commitment approach.

2.3.2. Effectiveness of Target Setting

An effective target is considered to be one that is operationalisable, measurable, amenable to evaluation, and time-bound with clear deadlines (Maxwell *et al.* 2015, Rietbergen & Blok 2010.). Russell-Smith *et al.* (2015) argued that absolute sustainability targets have more impact on the designs of sustainable buildings than intensity targets, as it turns an abstract goal into definitive steps that help people achieve their goals. Locke & Latham (2012) identified specificity and difficulty as key characteristics of targets that lead to performance improvements. Katzenbach & Smith (1993) emphasized that absolute targets promote communication and constructive conflict within organisations which correlate to increased performance.

The target must specify its direction and a degree to which a goal must be achieved. However, some opportunities might be neglected when companies have very specific targets, particularly, for the reduction of energy use and GHG emissions, let alone, specific targets that might be less relevant to overall corporate strategy. As a consequence, the genuine motivation for energy efficiency might be neglected (Rietbergen & Blok 2010).

The concept of SMART goals and targets means targets should meet the characteristics of being Specific, Measurable, Appropriate, Realistic and Timed (Edvardsson & Hansson

2005). These conditions help guide, motivate or regulate the target group (Rietbergen & Blok 2010). However, not all targets are SMART, and therefore, are not easily evaluable. Additional interpretation and requirements in quantitative terms are often required, e.g., payback period (Rietbergen & Blok 2010).

Archel *et al.* (2008) suggested corporate managers need to consider boundary setting for the targets, which consists of supply chain analysis and lifecycle analysis. There are two different boundaries: organizational and operational boundaries. Organizational boundaries indicate the horizontally set boundaries, i.e., it is set along with the corporate ownership including companies' subsidiaries, franchises whereas the operational boundaries refer to the vertically set boundaries, that is, supply chain and lifecycle of products and services including direct emissions (Scope 1 emissions), indirect emissions (Scope 2 emissions – electricity purchase) and other indirect emissions (Scope 3 emissions) (Antonini & Larrinaga 2017).

Antonini & Larrinaga's (2017) findings noted that corporate reports do not report their environmental impacts from outsourced goods and services. Ultimately, their outsourcing activities might be associated with poor sustainability performance. Furthermore, companies could mislead disclosure of their poor performance by disclosing their indirect and immaterial environmental impact, which is meant only to fit into the "in accordance requirements". This is consistent with Sullivan & Gouldson's (2013) view, who claimed that most of the reported targets are associated with companies' direct rather than indirect emissions. The inconsistencies and obscurities in their corporate reports do not allow stakeholders to make confident assessments of whether the targets have actually been delivered.

Targets have to be set regarding improvements of a company's environmental performance beyond a business-as-usual approach. Spitzeck (2009) suggested that setting "conservation" targets requires a benchmarking exercise in which the environmental performance of the specific company is compared to that of its competitors. This also includes benchmarking the company against the best practices in the relevant industry sector. According to Rietbergen *et al.* (2015) there does not appear to be a widely accepted definition of ambitious corporate GHG emissions targets. However, "ambitious" generally implies that corporate GHG targets should substantially go beyond business-as-usual projections, must be aligned with science-based climate targets, must be based on the adoption of best available techniques, and must require considerable effort in economic or financial terms and target achievement is not necessarily certain (Björnberg 2013). Therefore, it is of great importance to set high enough conservation targets that the company itself would not achieve alone, but which are nevertheless realistic and can, in fact, be achieved.

Rietbergen & Blok's (2013) findings showed that then-current levels of volume targets for CO_2 emissions reduction and CO_2 emission reduction targets measured against full-time equivalents (FTE) went beyond business-as-usual while CO_2 emission reduction targets measured against turnover were likely to be met anyhow. These targets are not science-based. They did not require substantial effort since no further investments were required or only needed implementation by "low-hanging-fruit" actions.

Gunningham *et al.* (2003) identified drivers in explaining beyond–compliance environmental policies. Firstly, managerial attitudes and leadership are cornerstones in deciding the level of a corporation's funding for beyond-compliance measures (Hirschhorn & Kirsten 1991). Secondly, the extent to which a company was aggressive and innovative in adopting proactive environmental policies was determined by two

external variables; levels of risks which are associated with the regulation and public scrutiny and market opportunities that could be acquired from ecological innovations. Thirdly, intra–organizational factors also need to be taken into consideration because the interpretation of risks and opportunities varies by different managers within the same firms. Finally, the interaction of internal and external factors will have an impact on the extent of a company's commitment to beyond-compliance measures, for example, regulatory pressures, market opportunities and constraints, and other stakeholder pressures. Ghobadian *et al.* (1998) also added elements linked with company's abilities in terms of human skills, financial resources, and flexibility to pursue a more stretching environmental direction.

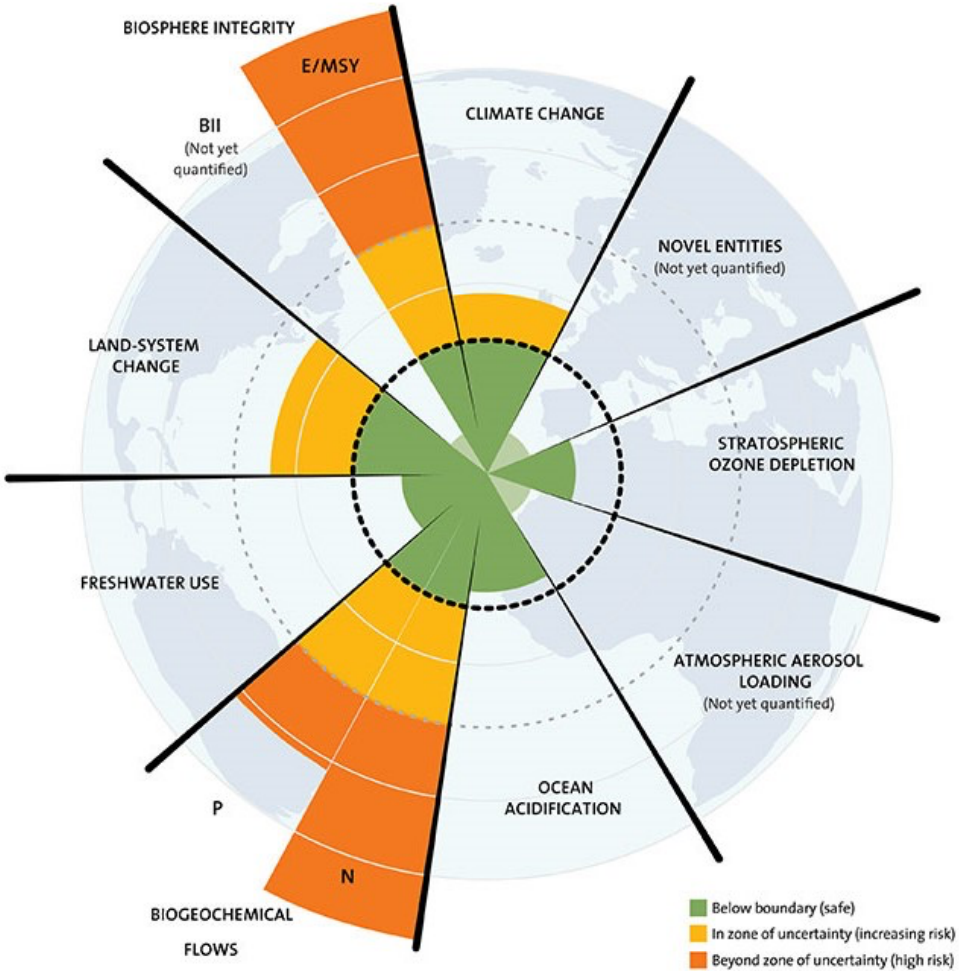
In summary, three major motivations for setting environmental targets related to the benefits gained from setting targets were discussed. Second, the influence of climate change target characteristics, numbering four, on corporate environmental performance and its impacts were discussed. These factors include target type, scope, difficulty and timeframe. It is necessary to take these into consideration in order to understand the extent to which companies are willing to set emission reduction targets. However, to further inform whether the corporate improvement in emissions management helps contribute to wider national or planetary-level improvements, the planetary boundaries and science-based target setting need to be explored.

2.3.3. Planetary Boundaries and Science-based Target Setting

An approach to reducing a substantial emissions volume at the corporate level may actually conceal unsustainable performance if the performance is considered in the ecological context (Haffar & Searcy 2019). The ecological context focuses on the natural capital on which companies depend for their operations as they extract natural resources

and release emissions (McElroy & van Engelen 2012). While the planet has its ecological limits, economic growth has none (Antonini & Larrinaga 2017). It is necessary to make sure that companies use natural resources only up to a point which allows the Earth to recover and maintain its function, that is, to ensure ecological resilience (Holling 1973). Rockström *et al.* (2009) presented a planetary boundaries framework that indicates nine environmental thresholds (illustrated in Figure 3 below). If we, as humankind, surpass these indicated tipping points, the entire system could destabilise and therefore, the future for humanity on earth may not be sustainable.

Figure 3: Planetary Boundaries



Source: Stockholm Resilience Centre (2019)

2.3.3.1. Planetary Boundaries

We have been living in the Holocene epoch for some 11,700 years where the environment is relatively stable, allowing an agriculture revolution and human civilisation to develop and flourish. Notwithstanding, humans are pushing our planet to a new epoch - the Anthropocene, i.e., the epoch in which humans have a significant impact on our planet's geology and ecosystems with unacceptable global environmental changes. Examples of these include a compelling acceleration of carbon dioxide emissions, rise in sea level, massive species extinction, and bleached coral reefs. Therefore, it is of great importance to know "the planetary boundaries for estimating a safe operating space for humanity with respect to the functioning of our planet" (Rockström *et al.* 2009, p.32).

These planetary boundaries were developed on the basis of three dimensions of scientific inquiry. The first is focussed on what extent human actions are associated with the sustainable capacity of our planet. The second represents the understanding of the impact of human actions on the global scale from the perspective of Earth System science research. The third reflects knowledge of the resilience framework explaining the self-regulation of living systems on our planet – Gaia Theory (Rockström *et al.* 2009). Nine planetary boundaries were identified, including climate change, ocean acidification, stratospheric ozone, global nitrogen and phosphorus cycles, atmospheric aerosol loading, freshwater use, land-use change, biodiversity loss, and chemical pollution. The quantitative safe operating space of seven planetary boundaries has been identified, with the remaining two (atmospheric aerosol loading and chemical pollution) not yet quantified.

Table 3: Nine Planetary Boundaries

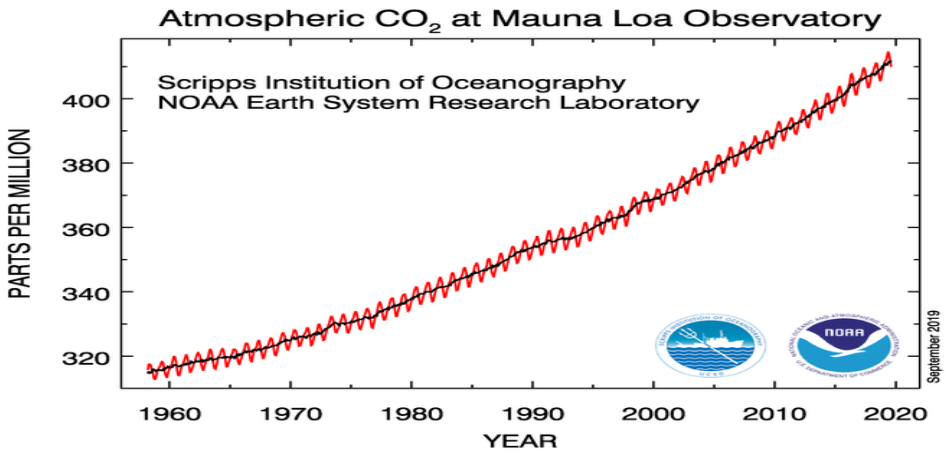
Earth System process	Planetary Boundaries	Pre-industrial Level
Climate change	Atmospheric CO_2 concentration at no more than 350 parts per million (ppm-which is used to measure the concentrations of CO2 in the atmosphere).	280
Biodiversity loss	Maintain 90% of biodiversity	0.1-1
Nitrogen and phosphorus inputs to the biosphere and oceans	The concentration of Nitrogen removed from atmosphere for human use: 35 mil tons/ year The concentration of Phosphorous following into Oceans: 11 mil tons/ year	0 (nitrogen cycle) -1 (Phosphorus cycle)
Land system change	Maintain 75% of the planet's original forests	Low
Ocean acidification	Surface ocean average global Aragonite saturation state: ≥ 80% of the pre-industrial Aragonite saturation state	3.44
Stratospheric ozone depletion	Stratospheric Ozone concentration: < 5% reduction from pre-industrial level of 290 DU	290
Global freshwater use	Can use up to 4000 km^3 of blue freshwater a year	415
Atmospheric aerosol loading	To be determined	n/a
Chemical pollution	To be determined	n/a

Source: Stockholmresilience (2019)

The present study focused exclusively on the climate change boundary. In July 1958, Dr Charles Keeling began measuring the amount of carbon dioxide in the Earth's atmosphere, with a first reading of 313 ppm (the Scripps Institution of Oceanography 2020). The most recent measurements, taken in October 2020, showed that global carbon dioxide levels had surpassed its sustainability limits at 411.29 ppm, a 31.4% increase from 1958. Figure 4 presents Keeling's curve, a graph which documents what appears to be a permanent trend of increasing CO_2 in our atmosphere and is without any sign of

slowing down, presenting a serious concern. The carbon level is expected to reach 500 ppm within 50 years if the current growth rate of CO_2 remains at 2.11 ppm per year (from 2005 to 2014). This has been linked to a three degrees centigrade warming of the average global temperature, which could cause extreme weather, endangers global food suppliers, and will disrupt animal mass migration as well as increase rates of extinction.

Figure 4: Keeling's Curve



Source: NOAA Earth System Research Laboratory

It has been estimated that three million years ago, during the mid-Pliocene period, our planet had a concentration of 300-400 ppm of CO_2, the global average temperature was 2-3°C higher than the present, and that global mean sea levels were at least 22±10 meters higher (Hansen *et al.* 2013). With the earth's increasing population, stagnating technology and continuing rise in emissions, the concentration of CO_2 in the atmosphere would likely be 2,000 ppm by 2250 which would lead to a temperature rise of nine degrees Celsius (IPCC 2018).

Rockström *et al.* (2009) suggested a global carbon emissions threshold of 350 ppm CO_2 above the pre-industrial level (the years from 1850 to 1900). Hansen (2006) argues that a 300-350 ppm CO_2 concentration should be the target if we want to preserve our Earth as in the contemporary epoch. If CO_2 emissions amount to 450 ppm for an extended time

period, it is predicted that the Earth will continue to become an ice-free state, causing the passing of climate thresholds which will initiate a dynamic response out of our control.

By taking both scientific analysis and political arguments of what is perceived as a realistic target at the 15th Conference of the Parties to the UNFCCC (Copenhagen 2009) into consideration, the goal for global average temperature rise should not be more than 2ºC higher than at pre-industrial levels. As a consequence, the UNFCCC set a GHG concentration limit to 450 ppm CO_2 equivalent.

However, Wigley (2018) argues that even with the scenario of 450 ppm, the sea level rise is estimated at 58±28 cm by 2100, which represents a truly alarming result. "The global sea-level rise is the sum of oceanic thermal expansion, ice melt from glaciers and small ice sheets, melt and ice loss from Greenland and Antarctica, and changes in terrestrial water storage" (Wigley 2018, p. 37). Ultimately, compared to the 450 ppm figure, a target of 350 ppm would mean 11 million fewer people exposed to extreme heat (Dosio *et al.* 2018), 61 million fewer people exposed to drought (Plumer. B & Popovich 2018) and 10 million fewer people exposed to the impacts of sea-level rise (IPCC 2018). In addition, this target would likely result in a vertebrate and plant species loss rate that is 50 percent lower than that for a 450 ppm limit by the end of this century (Science-based Target Initiative 2019). Species loss affects both the functioning of ecosystems and the response and adaptive capability of physical and biotic conditions (Sundung *et al.* 2008).

Despite rapid current CO_2 growth, many scientists argue we need to aim for the 350 ppm target (Rockström *et al.* 2009, Hansen 2006). However, to achieve this target, we need prompt, comprehensive and widespread policy changes. Also, coal use must be phased

out except where CO_2 is captured and agricultural and forestry practices that sequester carbon can be adopted (Hansen *et al.* 2008).

2.3.3.2. Corporate Science-based Target Setting

Targets might be a compelling tool to drive corporate environmental performance changes, but arguably they are only meaningful if they are set based on planetary boundary principles, i.e., a "fair share" of the total GHG emissions reductions required to meet a given future goal. It encourages companies to develop their products and services to align with the emerging societal needs in relation to sustainable transformations (Bjorn *et al.* 2017). Being given the maximum atmospheric CO_2 concentration globally of 350 ppm which serves as a global carbon budget in order to limit global warming, companies also need to contribute to this limit through setting their emissions reduction targets. "A carbon budget is the cumulative net global anthropogenic CO_2 emissions from a given start date to the time that anthropogenic CO_2 emissions reach net-zero that would result, at some probability, in limiting global warming to a given level, accounting for the impact of other anthropogenic emissions" (IPCC 2018 p. 26). The Fifth Assessment Report of the IPCC (2014) estimated that Earth's cumulative carbon budget should be limited to around 870-1,240 Gt of CO_2 to have at least a 50 percent probability of limiting global warming below 2°C, with a cumulative carbon budget of 420-580 Gt CO_2 to have at least a 50% chance of keeping the temperature increase to 1.5°C. However, McGlade & Ekins (2015) suggested that if all fossil fuel reserves were burnt by 2050, the total emissions resulting will reach nearly 2,900 Gt CO_2. They add that to meet a two degrees tipping point, in the case of no carbon capture system, we need to keep 35% of oil, 52% of gas and 88% of coal unburned.

There have been corporate level science-based carbon targets or methods developed. For example, the Climate Stabilization Intensity target was developed by British Telecom; the Corporate Finance Approach to Climate Stabilizing Targets was developed by Autodesk, 2009 and also there is the Science-Based Target Initiatives (SBTi). Among those, the SBTi has been most popular. 949 companies have committed to achieving them in the next two years and 430 companies globally have approved science-based targets. Targets adopted by companies to reduce GHG emissions are considered "science-based" if they are likely to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C (Science-Based Target Initiatives 2019). Emissions reduction targets must cover at least five years and have a maximum of 15 years from the date the company's target is submitted to the SBTi for official validation. Companies are encouraged to develop such long-term targets up to 2050 in addition to the mid-term targets as required by the Paris Accord.

There is a limited volume of research on science-based target methods (Faria & Labutong 2019, Agne & Vernet 2017). Faria & Labutong (2019) compared four different science-based target setting methods: the sectoral decarbonization approach (SDA), linear emissions reduction to target year (LERTY), GHG emissions per unit of value-added (GEVA) and the corporate finance approach to climate stabilizing targets (C-FACT). These are in terms of input and output variables for targets to be calculated, GHG scopes, allocation principles (such as temperature target, sector and geographical differentiation and mathematical formulations.

Their findings show that the choice of scenarios and the ability of companies to elect certain input values may have a strong effect on the level of ambition of the target. More particularly, base year and base year emissions choices can produce significant differences in terms of the total carbon budget. If companies select base year emissions

that are not representative of normal and future operating conditions, it could lead to an inappropriate increase in their allocated budget. In terms of emissions scopes coverage, C-FACT is the only method that proposes covering all 3 scopes in the same way. Nevertheless, GEVA only proposes looking at scope 1 – direct emissions. SDA can only be applied to scope 1 and 2 providing a different pathway for each and thus requires a separate input.

In addition, there is a need for more robust scenarios as none of them has been set to achieve well-below the 2°C (target of 450 ppm). All the methods offer the choice of expressing absolute or intensity targets even though the absolute emissions targets are more relevant than intensity targets. This is because a global GHG reduction target is set to limit global warming to below two degrees Celcius in absolute terms (requiring that we restrain our CO_2 emissions to no more than 1000 Gt CO_2 or reduce the current emissions level to between 41% to 72% by 2050).

The New Zealand national climate commitment is another important example of climate policy that has set absolute emission reduction targets. New Zealand's target under the Paris Agreement is to reduce 2030 carbon emissions by 30% from 2005 levels (or 11% below the 1990 level). New Zealand's National Determined Contributions (NDC) emissions targets, however, are rated as highly insufficient and not consistent with the Paris Agreement's 2°C limit (Climate Action Tracker 2020). This climate commitment is at the least stringent end of what would be a fair share of a global effort. If all countries were to follow New Zealand's approach, the global average temperature would exceed 2°C and could increase up to 3°C. Improving an intensity ratio does not necessarily reflect an environmental performance improvement. Nevertheless, companies prefer intensity measures since they allow for the growth of emissions (Fischer & Springborn 2011).

Trexler & Schendler (2015) argued that the efforts of individual companies can be rendered meaningless by the actions of others. They also criticized companies' science-target setting approach as "green fluff" and consider it to be a distraction that can lead to the delay of important policy. They provide four reasons for their "green fluff" interpretation; (i) only a small number of companies set science-based targets and their emissions account for an extremely small proportion of global emissions; (ii) corporate targets might not exist in a world without explicit policy or robust carbon pricing; (iii) science-based targets utilised by approved companies will prefer to seek low-quality carbon offsets which deliver few environmental benefits; and (iv) the approach to science-based targeting simply continues a long tradition of predictable effective actions masking unmeaningful solutions, further confusing the public and actually delaying progress.

2.3.3.3. Corporate Reporting linked with planetary boundaries/ science-based targets

The role of the corporation is of great importance in decreasing their greenhouse gas emissions and also offering innovative ways to decarbonize economies (Wright & Nyberg 2017). Unfortunately, there is a limited number of previous studies quantitatively measuring the impact of company emissions from the perspective of our planet's ecological system. Despite an increase in corporate environmental disclosure, Gray & Milne (2004) argued there is a discrepancy between the actual boundaries of ecosystem sustainability and corporate sustainability reporting boundaries. "Accounting for sustainability takes the planet as its accounting entity" (Gray *et al.* 2010, page 55). Consequently, it is challenging to insinuate the planet into specific sustainability boundaries indicators at the corporate level which rely on the science of sustainable development (Bebbington & Larrinaga 2014). Arguably, corporate reporting boundaries

need to be defined in a way that the indicators reflect their responsibility level on a sustainability issue that allows stakeholders to make their decisions.

Bjorn *et al.* (2017) examined 40,000 corporate sustainability reports over a period of 15 years from 2000 to 2014 in terms of references made to ecological limits. The findings show a significant tenfold increase in the number of references made to concepts of ecological boundaries or any term related to it. Nevertheless, only five percent of companies in their sample referred to the term ecology. More specifically, the number of references to climate change peaked in 2010, which coincides with the publication of the Copenhagen Accord of December 2009 (UNFCCC 2009). References to planetary boundaries only began to appear in 2011 following the 2009 publication of Rockström *et al.* (2009) and have increased since then.

In regards to target setting, there is a very limited number of companies that have used the concept of ecological threshold to define their targets. Even for those companies that set quantitative targets with a specific timeframe, there is a lack of information on any strategy for how to meet the targets. Most of these companies simply based their targets on a similar reduction percentage starting from a baseline year, thus implicitly adopting a grandfathering allocation approach where future emissions “rights” are based on historical emissions. Thus "dirtier" companies have effectively allocated themselves a larger emissions budget compared to their peers. These can be seen as unfair for two reasons: (1) such companies put little effort into reducing their emissions as they are entitled to relatively greater emissions levels at the expense of their environmental frontrunner counterparts; (2) such companies could outsource some of their activities as they only report their operational boundaries in the report, instead of reducing emissions by innovating or changing their business models.

Wright & Nyberg (2017) examined managerial perspectives in addressing climate change policies and practices based on five in-depth case studies of the largest Australian companies over a period of 10 years from 2005 to 2015. They model changes in corporate responses to climate change and found three key stages in the corporate translation of climate change, which they labelled framing, localizing and normalizing. The framing stage captures senior managers' acknowledgment of climate change as an important issue while presenting business targets consistently with business goals. The localizing stage establishes the actions to be adopted which aligns the climate change initiatives with current business practices, whilst the normalizing stage involves decision making throughout the business that aims to maximize shareholder value. Notwithstanding, the authors conclude that organisational engagement in climate change is limited. Particularly, low hanging fruit ideas and practices were amenable to the prevailing discourse of profit maximization and business-as-usual. Despite the managers' concern about the consequences of climate change, and also understanding the tension between meaningful engagement with the climate change issue, short-term profitability is still the key focus because managers are afraid of being replaced if they do not meet market demand. Unfortunately, then, they find little to no engagement with planetary boundaries.

Antonini & Larringaga (2017) also explored sustainability reports disclosed by a sample of the top FT 500 companies on how they are setting environmental boundaries in practice. Although a large proportion of their environmental impact is indirect, i.e., emissions come from upstream in their supply chain or arise downstream in the lifecycle of their products, their findings show that corporate reporting boundaries are not aligned with ecological sustainability boundaries. The companies sampled did not report the environmental impacts of their outsourcing activities which allowed them to mask their

unsustainable performance. This, therefore, does not allow stakeholders to make accurate sustainability assessments in their decision-making.

Whiteman *et al.* (2013) pointed out that an increase in corporate disclosure on planetary boundaries and ultimately, climate change science is a starting point for action. Companies need to determine their fair share of global emissions and to set individual targets for reduction. These emission reduction targets must be aligned with sectoral level targets, local and regional targets and also global aggregate target levels. Greater knowledge of environmental degradation will not create sufficient conditions for corporate action without appropriate firm and market-based incentives and for regulatory and policy frameworks closely tied to managerial effort and institutional pressures for change.

2.3.4. Achievement of Emissions Reduction Target

2.3.4.1. Performance measurement and feedback

Measurement and feedback are fundamental to embedding sustainability into business practices. Its objectives are to measure results and to make them visible, to track, evaluate and learn from both success and mistakes, and to reward results and encourage continued improvement. The challenge is to develop the appropriate benchmarks and base-line information.

Otley (2006 cited in Berry *et al.* 2006) noted that there are several relevant sources of information on the content of the target. What has been achieved in previous periods is always a relevant source of information as it enables judgment of what is actually feasible in given circumstances. It is, however, necessary to supplement this historical information with information on what is being done elsewhere. External benchmarking has become popular in recent years. This involves discovering the performance levels

achieved by competitors. The requirement of customers and shareholders also provide important information on the performance levels required for future survival. These sources of external information can also provide legitimacy to the target setting process. A difficult target may be rejected by a manager who feels that it is purely an arbitrary imposition by a demanding superior.

Performance benchmarking is an incentive for companies to at least match the best industry performance and seek continuous improvement: "The rationale is that target setting in isolation makes little sense for a company. Performance benchmarking should be the way targets are set" (Dusek & Fukuda 2012, p339).

In the case of benchmarking targets, Rietbergen & Blok (2010) observe that companies do not have to perform better than their peer group. Consequently, these targets do not lead to the best environmental outcome possible. Another problem with benchmarking is that setting the level of a target may be difficult. For example, it is difficult to assess the energy efficiency of the world's top businesses because of the strategic value of this type of information.

2.3.4.2. Target achievement

Rietbergen *et al.* (2015) focussed on the target setting process of the CO_2 Performance Ladder scheme. They found that targets were achieved relatively easily because of smaller project portfolios (in cases of absolute targets), more efficiency with increased business (in case of relative targets), and inflation (in cases of targets expressed against turnover). More realised CO_2 emission reductions than expected and a strong contribution included supporting governmental policies (e.g., attractive fiscal policies for leasing energy-efficient cars). Some companies even knew beforehand that they could

easily achieve their targets because targets were set for a very short time frame and the energy savings measures would be implemented anyway.

Gouldson & Sullivan (2013) studied the UK supermarket sector in order to examine the contribution that voluntary commitments can make to wider public policy goals on climate change. They found that, firstly, companies had reasonably clear strategies for delivery of their climate change commitments. The companies sampled had published supplementary targets that underpinned their overarching commitment. A number of them had committed significant resources to low carbon and related investment. They were also increasingly providing information on the actions that they had taken and outcomes (in terms of emissions reductions) that resulted from these actions, and they provided a description of actions they intend to take in the future.

Secondly, for those targets and commitments where information was currently available, companies had made reasonably good progress towards the targets they set for themselves. How companies had performed against the commitments they made since they started reporting suggested a very high degree of target delivery, with most targets being met or exceeded. Where targets were not met, sample companies were reasonably clear about reasons why (including whether reasons were internal or due to external factors such as changes in policies or incentives).

Thirdly, the annual types of efficiency gains being targeted by companies seem to have been broadly consistent with the longer-term efficiency gains that the sector has achieved. These efficiency gains were a direct result of their focus on testing of new technologies and new approaches to energy efficiency and the systematic deployment of these across their businesses. Companies developed green stores which were significantly more efficient than existing stores and they implemented a series of

management processes (e.g., targets relating the development of green stores, targets relating to the deployment of innovative technologies and approaches across their business) to ensure that cost-effective innovations were then deployed across the entire business.

Gouldson & Sullivan (2013) concluded that the plausibility of corporate commitments can be assessed in three ways: (i) level of detail underpinning targets (the greater the detail, the greater likelihood that the company understands how it intends to achieve its targets); (ii) the company's history in terms of meeting previous commitments (where a high level of target delivery should provide a greater degree of confidence that current targets will be met); (iii) historic performance (where alignment or consistency with historic emission performance should provide a higher degree of confidence).

2.3.4.3. Target change

Dusek & Fukuda (2012) examined corporate environmental performance in terms of environmental targets in a sample of major Japanese manufacturing companies. They found that companies successfully reached their first milestones but this was then substituted for another target. Some changes appeared to be minor but actually have a significant impact on the calculation of the target, e.g., "per unit sales" replaced by "per basic unit" (p.340). Due to changes in the scope of methodology, previously set targets could be difficult to track further, e.g., reduction of CO_2 emissions was changed to "reduction of energy use converted into CO_2 emissions". Companies thus reacted to negative developments by redefining, discontinuing or setting up new targets. These changes made it difficult for stakeholders to keep track of corporate progress in reducing environmental impact. The variety of target revisions, re-definitions, methodology and scope changes, and annual recalculations (when more accurate coefficients became

available) required detailed content analysis of corporate social responsibility reports, in-depth analysis of individual targets, and monitoring of the changes and the reasons behind them. In a number of cases, the explanation for a revision or discontinuation of a target was missing. This is a challenging task for companies to manage. The level of inconsistency was disturbing enough to necessitate further investigation of this phenomenon (Dusek & Fukuda 2012).

Arguably, targets should be communicated publicly and progress towards them should be reported transparently to the stakeholders for its own assessment. However, corporate reporting practice makes it very difficult for stakeholders to reliably assess corporate performance. The reasons for this have included the evolution of their data gathering and acquisition processes (which has meant that previous years' data has needed to be restated), new emission factors and calculation protocols, the evolution of scope of reporting (both in terms of geographic scope and the range of activities covered by reporting), business changes (e.g., acquisitions, insourcing or outsourcing of particular business functions) and the adoption of new performance measures and the discontinuation of others. The consequence of the above is a great difficulty in reliably assessing progress towards long-term performance targets. Expressed another way, the ability of stakeholders to hold companies to account is limited by the weaknesses in the reported data, in turn potentially reducing the incentive for companies to deliver on their commitments (Sullivan & Gouldson 2012, Gouldson & Sullivan 2013).

Some of the environmental objectives can be formulated in a way that makes them imprecise and difficult to evaluate. Furthermore, the objectives are uncoordinated in the sense that relationships that exist between them are not sufficiently clarified and no comprehensive attempt has been made to identify actual or potential goal conflicts (Edvardsson 2007). As a result, environmental objectives tend to differ in their degrees

of operationalisability and the means of priority setting between different goals is often unclear. This contributes to insufficient goal realization since the objectives cannot be used to direct or control activities of the public sector in an efficient way.

2.3.4.4. Failure of target achievement

Dusek & Fukuda (2012, p.341) suggested that the reason why a target was not achieved as planned is growth in the business, specifically "we were unable to achieve the target because of the impact of changes in business activities and rapid market fluctuations". Some companies are lagging far behind on target setting due to the need for extra investments, the increased number of projects and delayed implementation of energy-saving measures (Rietbergen *et al.* 2015).

Gouldson & Sullivan (2013) observed that target setting in UK climate policy suggests that a reduction of 1 to 1.5% per annum through 2020 and a reduction of 2.5% per annum through to 2050 is necessary within the economy. They found that their sample of British supermarkets' target settings were in line with these policy targets. In fact, over a short period of time, numerous supermarkets had already set targets of reducing emissions by more than 1.5% per annum. However, if these targets are compared with the science-based target suggested by the IPCC, they fall short both in terms of annual emissions reductions expected and the duration of the targets. Furthermore, environmental target setting might not lead to improved environmental performance, and hence actual reduced environmental impacts**.** Several studies have concluded that some goal attributes, namely, specificity and ambitiousness, do not actually boost productivity (Shapira 1989, Wood *et al*. 1987). Hollenbeck & Klein (1987) found that goal setting did not increase performance when individuals failed to adopt the goal. Similarly, productivity might not improve certain complicated tasks (Earley *et al*. 1989). Goal-setting may not achieve

underlying objectives because the specific goals are defined too narrowly (Staw & Boettger 1990). Tenbrunsel & Messick (1999) also suggested that having specific performance goals caused organisational members to focus on the "business case" decisions and to ignore the ethical elements in doing so because efforts were constrained by the initiation of a specific standard.

The environmental target is often decoupled from an organization's activities. In other words, the environmental target may be associated with little actual effort and hence, little actual environmental improvement. Companies may remain reluctant to commit to absolute targets. For example, if a company focuses on level of compliance, it may choose not to commit to measurable targets for environmental considerations (Sroufe *et al.* 2000). Another reason for not committing to these targets could be that evidence on financial benefits remains somewhat ambiguous. Montabon *et al*. (2007)'s findings show no correlation of specific environmental design targets with a company's growth in sales revenue. Hoffrén & Apajalahti (2009) also stated that challenges remain even when companies face short-term cost reductions and long-term profit gains. Ultimately, for many companies, a cost-saving that results from a decrease in resource use might not be as important as profitability. This therefore excludes an efficiency increase from corporate orientation.

Individual corporations are usually free from the physical constraint of limited natural resource stocks and thus, they have no visible links to the Earth's ecological capacity other than price. Eco-efficiency improvements do not mean that the absolute ecological sustainability system could be retained while the economic system is strongly and rapidly growing in terms of both size and volume (Hoffrén & Apajalahti 2009, Hoffrén & Korhonen 2007). In other words, a company can lessen its environmental impact compared with the size of its operations, but the total environmental impact can still

continue to rise. As we noted earlier, but worth restating, McDonough & Braungart (1998, p.259) observed that "an improvement in efficiency in using a resource leads to increased use of that resource rather than to a reduction because the resources saved by the increased efficiency will be used for other purposes and the absolute use of resources will continue to grow".

2.4. Identifying Gaps

The above literature review on corporate climate change strategies, target setting and reporting noted the scope and approach taken in the previous literature. Overall, these published studies have examined a series of climate change target characteristics (e.g., the type of target, target scope, target ambitiousness and timeframe) associated with environmental performance. However, the meaningful interpretation of corporate climate change target disclosures by stakeholders is also critically important as how companies use the concept of ecological threshold (climate change tipping point) to define their targets is relatively unacknowledged. There is a small number of studies quantitatively measuring the impact of company activities on our planet's ecological system with the exception of some companies that voluntarily report their on GHG emissions (Whiteman *et al.* 2013). Without science-based targets, organisations have no way of determining whether their efforts in reducing GHG emissions are ultimately contributing to ecological sustainability (Haffar & Searcy 2017). Work that adds to and extends Haffar & Searcy (2017) and Whiteman *et al.* (2013) is therefore needed.

Further research in the corporate climate change mitigation area would help in understanding not only the factors and rationales embedded in the climate target setting and reporting but also provide greater insights into corporate willingness to publicly report (and not report) their GHG emissions targets and performance against established

targets, as it is a voluntary reporting regime. In addition, more research needs to be done to examine their willingness to set (not set) their climate targets, especially science-based targets, in spite of the growing concern of society and regulatory pressures in recent years about climate change and the Paris Accord's global average temperature goals. Building on Tregidga & Milne 2006, Haffar & Searcy 2017, further investigation into climate target setting and reporting is necessary.

Another gap in studies on corporate climate change reporting exists in relation to the production of corporate climate change mitigation messages and an analysis of the messages themselves. Work that adds to and extends Tregidga & Milne (2006), Milne *et al.* (2004) which analyses the construction of corporate sustainability messages, is therefore vital. Analysis of the construction of the climate change mitigation and climate change targets messages within corporate public reports is likely to result in valuable insights into organisational reporting, in particular, an investigation which analyses meaning, meaning construction and its effects.

This research adopts a mixed methods approach, including content analysis, discourse analysis and fieldwork study (semi-structured interviews) focused on a small sample of the NZX largest 50 listed companies. Particular attention is paid to managerial insights and perceptions in their corporate climate change mitigations. While previous studies have mainly used CDP data or have undertaken a longitudinal approach to examine a large archive of sustainability reports (e.g., Dahlmann *et al.* 2015, Ioannou *et al.* 2015 Bjorn *et al.* 2017, Antonini & Larrinaga 2017, Liu & Yang 2017, Doda *et al.* 2016), the scope and focus of this study are unique.

2.5. Conclusion

Companies might adopt strategies to respond to stakeholder's pressures in relation to the impacts of their GHG emissions. These might be symbolic actions, which create a positive impression without requiring changes in operations or substantive actions that are more consistent with social expectations.

In addition, the environmental disclosure literature has identified a relationship between the level of environmental impacts and the level of corporate disclosure. This is in terms of high and low environmental intensive sector-based companies with regard to the idea that the more companies are aware of public concerns which could threaten their legitimacy, the more environmental information they disclose. It can also be argued that carbon disclosure does not only minimize pollution but also promotes profitability, technological innovation and competitive advantage. However, not all of the literature's findings support the positive relationship between carbon data disclosure with a direct impact on emissions performance (e.g., see Belkhir *et al.* 2017).

In terms of corporate environmental target setting, several rationales can be identified. These include strategic rationale, pressure from stakeholders, preparing for upcoming environmental influences, and simply doing the right thing.

Some research has focused on companies that have decided to disclose their environmental targets and performance outcomes. This suggests that setting difficult targets is positively associated with organisational performance, while other research argues that very a difficult target might impose significant and problematic pressures on companies.

The symbolic strategy and the substantive commitment strategy for setting emissions reduction targets were presented and discussed. It was noted that the choice of strategy

could be based on any of several factors. Target type, scope, ambitiousness and timeframe were explored. However, to be considered an effective target, it must clearly specify its direction and the degree to which the target must be achieved. Without understanding the planetary boundaries principle, for example, the "fair-share" of total GHG emissions reductions required to meet the Paris Agreement's temperature target, the target is arguably meaningless. There is a limited number of studies quantitatively measuring the impact of company actions from the perspective of the planet's ecological system (see Bjorn *et al*. 2017, Haffar & Searcy 2018, Antonini & Larringaga 2017, Wright & Nyberg 2017). In fact, it is challenging to translate planetary limits into specific sustainability boundary indicators at the corporate level. These rely on the evolving science of sustainable development, which therefore could reflect the actual level of corporate responsibility in mitigating the climate change problem.

The literature in the area of organisational carbon target setting and disclosure has been overviewed in this chapter. The purpose was to provide the foundations for the research from the literature in the field and to mark a place in it for this project.

CHAPTER 3 – THEORETICAL FRAMEWORK

3.1. Introduction

The literature focussed on corporate climate change reporting has applied a variety of theoretical viewpoints. Researchers have applied legitimacy theory, stakeholder theory and institutional theory to the analysis of voluntary organisational climate change reporting practices. However, most studies seem to agree that institutional theory and legitimacy theory best explain factors influencing corporate social and environmental sustainability disclosure (Ioannou & Serafeim 2012, Reverte 2009).

This chapter provides an overview of legitimacy theory and institutional theory, which will be applied in this research. The chapter begins with legitimacy theory and discusses types of corporate legitimacy, strategic and institutional approaches to legitimacy and rationales for investigating carbon emissions reductions in organisational research. Deegan (2019) considers legitimacy theory as a mainstream explanatory tool in the social and environmental accounting literature as it is a relatively easy theory to understand and subsequently apply. However, legitimacy theory does not provide detailed insights into how the institutional context in which companies operate is influential and how target setting and reporting practices might be determined by institutional pressures.

The next section thus provides a discussion of institutional theory and its components, with consideration of coercive isomorphism, normative pressures and mimetic processes. Institutional theory in sustainability reporting and in corporate climate change disclosure is then discussed in order to provide a deeper understanding of the influence provided by institutional context. In Section 3.5, a theoretical framework for this study will be developed. Summary and concluding comments are made in the final section.

3.2. Legitimacy Theory

3.2.1. Definition of Legitimacy

Organisations operate in a social, political and economic context (Buhr 1998). They do not have an inherent right to resources. Within the social, political and economic framework, power conflicts exist between various groups within society such as organisations, Government, individuals and groups (Deegan 2002). Hence, firms exist to the extent that society considers that their operations are acceptable (legitimate). In other words, a firm is considered to be legitimate if its means and ends appear to conform to social norms, values, and expectations. Firms have obligations to society that go beyond their interests and legal responsibilities (Albarrak *et al*. 2019).

Suchman (1995, p. 574) defined legitimacy as ...“a generalised perception or assumption that actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions”. Deephouse and Suchman (2008, p. 51) extended the legitimacy definition by noting that “Legitimacy is not a commodity to be exchanged but a condition reflecting cultural alignment, normative support, and consonance with relevant rules and laws”. Parson (cited in Dowling and Pfeffer, 1975, p. 175) pointed to legitimacy as the “appraisal of action in terms of common values in the context of the involvement of the action in the social system”. A similar definition was provided by Lindblom (1993, p. 52), noting that “legitimacy is a condition or a status which exists when an entity’s value system is congruent with the value system of the larger social system of which the entity is a part”.

The idea of legitimacy can be related to the concept of the social contract as referred to by Mathews (1993, p. 26). Legitimation is the process whereby an organisation justifies to society its right to exist, that is to continue to attract, sustain their access to needed

resources and get supported by relevant publics (Dowling and Pfeffer 1975, Deegan 2019). This means that an organisation's survival will be threatened if society discerns that they have breached/or have not complied with their social contract (creating what is referred to as a "legitimacy gap"). Lindblom (1993) noted that relevant publics may be internal stakeholders (employees, shareholders) or external stakeholders (customers, competitors, communities and the general public). These stakeholders observe organisations, make evaluations and act (Ruef & Scott, cited in Castelló *et al*., 2016). Without legitimacy, an organisation will not be able to maintain its license to operate nor gain new spheres of power to grow, for example, by securing necessary resources inclusive of labour, which might reduce demand for its goods and services (Castelló & Lozano 2011, p. 12). The penalties for lack of legitimacy may be economic, legal or social in nature (Lindblom 1993).

Social expectations are considered likely to change across time (Deegan 2019). Ashforth and Gibbs (1990, p. 177) noted that "legitimacy is always problematic as social values and expectations are often contradictory, evolving, and therefore are difficult to operationalise". Lindblom 1993, cited in Gray *et al*., 2010, p. 52 pointed out that there can be conflict in the judgments of the various relevant stakeholders about an organisation's legitimacy. These legitimacy gaps fluctuate as the expectation of relevant stakeholders changes without any necessary change in action on the part of the corporation. However, the organisation can impact and manipulate legitimacy (Woodward *et al*. 2001, cited in Deegan 2002, Deegan 2019) through various managerial actions such as taking corrective actions, often by focusing on the adoption of disclosure-related strategies. Corporate disclosures are used to manage or manipulate relationships with the relevant society. Managers' efforts to sustain an organisation's legitimacy are motivated by the profitability goals/survival that is ultimately linked to their self-interest

(Deegan 2019). Luo and Tang (2014, cited in Albarrak *et al*., 2019) emphasised that managers have private information about firm's GHG emissions including their carbon strategy, carbon emissions, and carbon reduction activities that are not directly accessible by outside stakeholders.

3.2.2. Types of organisational legitimacy

Legitimacy is a "multidimensional concept" which consists of different dimensions that co-exist in the real-world setting (Albarrak *et al*. 2019). Suchman (1995) emphasised three different categories of corporate legitimacy; pragmatic legitimacy, moral legitimacy and cognitive legitimacy.

Pragmatic legitimacy deals with self-interested evaluations of an organisation by its most immediate stakeholders (Suchman 1995, p. 577). Self-interest can be categorised by (1) exchange legitimacy (where the expected value of an organisation's behaviours is in line with stakeholders' beliefs and norms; (2) influence legitimacy (where an organisation's behaviours are shaped by stakeholders' beliefs); (3) dispositional legitimacy (where it is believed that organisations act in their stakeholders' best interests, where they attempt to portray themselves as honest, trustworthy, and that they share and promote values that mirror those of stakeholders) (Kuruppu *et al*. 2019). Castelló and Lozano (2011) emphasised that under the pragmatic legitimacy perspective, organisational legitimacy is sustained as long as stakeholders believe that they will receive benefit directly or indirectly from the company's activities, e.g., a product or operational innovation which might lead to some sort of social and environmental benefits. In other words, is there a business case for engaging in a sustainability action? (Thomas & Lamm 2012). Therefore, pragmatic legitimacy represents the organisational capacity to persuade key stakeholders of its usefulness, in terms of their operations, products and services.

Moral legitimacy reflects the positive normative approval of the organisation that rests on the judgement of organisational behaviour and activities that are the "right thing to do" or not (Suchman 1995). This form of legitimacy rests on the conscious moral judgements of the organisation's outputs, procedures, structures and leaders (Palazzo & Scherer 2006). It results from engagement through action or dialogue, for example, through positive stories of success (Castelló & Lozano 2011, Kuruppu *et al*. 2019). Moral legitimacy focuses on the ethical foundations of organisational activities which generate organisational responsibility norms that resonate with their stakeholders (Bowen 2019). It means that a favourable moral legitimacy evaluation requires looking beyond the pragmatic evaluation of organisations to see if they pursue activities that are valued as socially positive and are considered more important than their self-interests (Albarrak *et al*. 2019). Suchman (1995) described four forms of moral legitimacy: (1) consequential legitimacy (where organisations should be judged by what they accomplish; (2) procedural legitimacy (where organisations exhibit socially accepted techniques and process; (3) structural legitimacy (where the organisation looks like the right organisation for the job) and (4) personal legitimacy (individual organisational leader). Hrasky (2012) stressed that the pursuit of moral legitimacy through consequential and procedural legitimacy needs a substantial approach to reporting. Pragmatic and moral legitimacy requires discursive interaction with stakeholders and thus, are appropriate to explore in the context of social and environmental disclosure strategies (Hrasky 2012).

One of the rationales for a company to engage in sustainability practices is to gain competitive advantage rather than adhere to compelling moral motivations or service their business case. Companies, therefore, can embrace the weak form of sustainability by seeking low-hanging fruit or win-win opportunities (Turner 1993, Welford 1998). Although adopting weak sustainability strategies can slow the rate at which our

ecosystem deteriorates, it actually undermines progress toward achieving substantial long-term sustainability (Tilley 2000). In contrast, strong sustainability would require firms to operate both individually and collectively to ensure the planet's carrying capacity is not exceeded (Malovics *et al*. 2008). From this perspective, profit-making would no longer be a company's primary objective, though it would remain a necessary constraint, essential to its ability to sustain operations and attract capital investment (Thomas & Lamm 2012). Companies might persuade policy-makers to adopt regulations and incentives that reward companies for operating more sustainably, such as greenhouse gas fees levied on fuel sources according to their relative contribution to climate change (Bendell & Kearins 2005). If full social and environmental costs were included in the price of goods and services (Reinhardt 2000), profit-seeking behaviour would serve to enhance the quality and long-term viability of the firm's social and natural habitats (Foxon & Pearson 2008).

Suchman's third dimension, cognitive legitimacy is established when organisational behaviour and activities are perceived as adequate and accepted without question or are taken-for-granted (Suchman 1995, Iglesias-Pérez *et al*. 2018, Albarrak *et al*. 2019). Cognitive legitimacy refers to the extent to which the perceived comprehensibility of a new action/policy is congruent with established conceptual maps that individuals rely upon to organise information and make sense of their environment, where culturally supported and conceptually correct support of legitimacy become unquestioned (Adams & Larrinaga-Gonzalez 2007, Thomas & Lamm 2012). By operating mainly at the subconscious level, cognitive legitimacy makes it difficult for the organisation to directly and strategically influence and manipulate the stakeholder's perception (Suchman 1995). There are risks, however. Cognitive legitimacy may collapse if stakeholders perceive sustainability projects are merely attempts at reputational gain (Castelló & Lozano 2011).

Suchman (1995) identified two categories of cognitive legitimacy: (1) Comprehensibility and (2) taken-for-granted legitimacy (inevitability or permanence). Deephouse *et al*. (2017, cited in Kuruppu *et al*., 2019) suggest different states of organisational legitimacy. Organisations have cognitive legitimacy which reflects the taken-for-granted nature accepted by stakeholders are not subjected to scrutiny. On the other hand, organisations have been approved as acceptable and proper organisations, a status which is less secure than the taken-for-granted organisation. Debated legitimacy arises where different stakeholders have different opinions and challenge the values and behaviours of an organisation. Illegitimate organisations are essentially those which have failed to maintain their license to operate (Deephouse *et al*. 2017). Company managers might expect that introducing sustainability practices will make their job more complex than traditional business decision-making models which emphasise profit maximisation, at least in the short-run. On the other hand, managing more sustainably might help decision-making in the long run, for example, by reducing the burdens imposed by regulatory compliance and via diminishing conflict with stakeholders (Thomas & Lamm 2012). Therefore, the more readily perceived near-term impact on cognitive burden is more likely to influence managers' acceptance of, or resistance to sustainability strategies and initiatives.

In reality, organisations might face both strategic operational challenges and institutional pressures and therefore, it is of great importance to understand the level of strategic and institutional pressures on corporate legitimacy in order to evaluate the desirability, propriety and appropriateness of the corporate strategy in managing their relationships with their stakeholders. The strategic and institutional approaches to legitimacy are discussed in detail hereafter.

3.2.3. Strategic and Institutional Approaches to Legitimacy

Growing social concern over climate change has encouraged companies to voluntarily disclose information about their climate change initiatives, targets and performance against targets to stakeholders and society in order to demonstrate organisations' responsibilities towards the environment (Kouloukoui *et al*. 2019). Arguably, this increase is due to growing public and regulatory pressures, and also a need to maintain organisational reputation and legitimacy with stakeholders (Adams 2002). The growing expectations of society for a corporate role on carbon engagement may end up with the implication of more substantive GHG emissions management and reporting over time (Borghei *et al*. 2016).

Following from the institutional approach, legitimacy is not an operational resource controlled by managers but their stakeholders construct that which penetrates the firm in every respect (Suchman 1995). Institutional legitimacy indicates the role of external, cultural and contextual factors in constructing collective actions on social and environmental issues or shaping firms and the standards by which they are judged (Kuruppu *et al*. 2019, Bowen 2019). The main difference between strategic and institutional approaches is that "the strategic approach adopts a managerial viewpoint looking out whereas the institutional approach adopts the viewpoint of society looking in" (Suchman, 1995 p. 577).

Ashforth and Gibbs (1990, p. 178) identified two general means by which firms seek legitimacy: (1) substantive management and (2) symbolic management. Substantive management means actual and considerable change in corporate objectives, structures and processes or social institutionalised practices. For substantive management, the organisation could meet the performance expectation of their stakeholders (role

performance), seek legitimacy through conformity to values, norms and fulfilling expectations of stakeholders (coercive isomorphism), alter suppliers or resources (altering resource dependencies), or bringing socially institutionalised practices, law, and traditions into conformity with its ends or means (altering socially institutionalised practices).

Symbolic management highlights the portraying images or symbolically managing them so the organisation will appear consistent with social values and expectations. An organisation can thus pursue goals that are less socially acceptable while pretending to support socially acceptable goals (merely espousing socially acceptable goals), or might avoid and suppress information regarding their activities or performance that can undermine their legitimacy (denial or concealment); or are able to alter value systems and provide justifications for their actions (redefining means and ends); by providing explanations, excuses and justifications to the events/situations that reflect unfavourably on their image or claims to legitimacy (offering accounts); providing apologies for the negative situations (offering apologies); and adopting certain bureaucratic practices which are consistent with rational management (ceremonial conformity). Symbolic disclosures might not be sufficient to inform stakeholders in their decision-making (Easterby-Smith *et al*. 2008, Marshal & Brown 2003).

Suchman (1995) summarised a range of different studies in the literature on corporate legitimacy into strategic and institutional approaches. The strategic approach predicts the conflict between systems of belief in which managers who favour flexibility and economy of symbolism and society who prefer more comprehensive responses (Suchman 1995, Ashforth and Gibbs 1990). The strategic approach assumes that corporations have the power to influence the societal context and shape the legitimisation process (Castelló & Lozano 2011).

Ashforth and Gibbs (1990, p. 182) noted that legitimation strategies are likely to vary in accordance with whether the purpose is to extend, maintain or defend legitimacy. Organisations extend legitimacy when they are becoming established or are entering a new domain of activity or utilising new structures or processes. Organisational legitimacy might need to be extended where (1) an organisation has incomplete knowledge of cause-effect relationships or technologies, or lack clear output standards (e.g., education), (2) organisational procedures and values are disputed by society, (3) organisations lack the support of traditions and norms, (4) an organisational activity entails substantial risks or (5) stakeholders anticipate a long-term relationship with the organisation. In order to extend their legitimacy, managers may prefer to follow or adopt a symbolic approach rather than substantive action due to its flexibility. However, managers are more likely to follow with a substantive action if stakeholders have higher power, motivation and political skill. Suchman (1995) listed three different legitimacy-gaining strategies: (1) efforts to conform to stakeholders which simply position their organisation within preexisting institutional beliefs and values; (2) select stakeholders among environments that will not demand many changes in return in order to achieve legitimacy; (3) manipulate environments by creating new audiences and new legitimating norms.

Ashforth and Gibbs (1990) stressed that organisations maintain legitimacy when they have attained a sufficient level of approval for their ongoing activity. Maintenance strategies include ongoing role performance and symbolic assurances that all is well, such as the disclosure of "good news" to shareholders and charitable donations. These also include attempts to anticipate and prevent emerging legitimacy threats. This consists of both substantive strategies and symbolic strategies by periodic scanning of internal and external environments, taking the stakeholders' perspective when making decisions.

Suchman (1995) pointed out two strategies for maintaining legitimacy. First, enhancement of the firm's ability to identify and acknowledge stakeholders' reactions and thereby to foresee potential confrontation, and second, the protection of accomplishments they have already acquired.

Organisations attempt to defend their legitimacy when the intensity of their activity is high and also when their legitimacy is threatened or challenged. Defence will require a significant effort in developing reactive and symbolic strategies (Ashforth & Gibbs 1990). Suchman (1995) detailed three broad strategies to repairing legitimacy: (1) normalising accounts that separate the threatening from more substantial evaluation of the organisation as a whole such as denials, excuses, justifications or explainations of events; (2) restructuring which allows organisations to act decisively and visibly to remedy the failure, and (3) organisation face legitimacy challenge should avoid panic by acquiring patience and restraint.

Gaining or maintaining legitimacy has also been addressed in the literature. Dowling and Pfeffer (1975) highlighted three strategies that a firm can use to become legitimate. Firstly, a firm can adapt its objectives and organisational practices to conform to stakeholders' beliefs and norms. Secondly, a firm can pursue legitimacy through communication, to reshape the stakeholders' expectations so that a firm's operations, outputs and values comply with desirable standards of social legitimacy. Finally, a firm can make an effort, again through communication, to become identified with symbols, values or institutions which have a strong base of social legitimacy.

Lindblom (1993) identified four alternative strategies to legitimisation to respond to such public pressure. Firstly, firms can make internal changes to close the legitimacy gap by informing the relevant public about their actual changes or intentions to gain

performance. Secondly, without adjustment in organisational action, firms might only attempt to demonstrate the appropriateness of outputs, methods and objectives to the public through education and information. Thirdly, a firm can try to manipulate the perceptions of the relevant public by attempting to associate itself with other organisations having high legitimate status. Finally, they might put effort into educating the relevant public and trying to bring the public's expectation more in line with corporate performance without making any internal adjustment to close the legitimacy gap.

Lindblom (1993) primarily focused on the strategic aspect of organisational legitimacy, whereas Dowling and Pfeffer (1975) covered the institutional context of organisational legitimacy. Hence, following the legitimacy logic view, environmental target setting and reporting might not lead to any significant change in the firm's environmental performance. The following sub-section justifies the rationales for corporate adoption of a climate change symbolic strategy.

3.2.4. Rationales for symbolism and carbon emissions reductions

There are reasons why managers prefer a symbolic commitment to the natural environment instead of a substantive commitment. Firstly, many stakeholders believe there is no positive association between environmental responsibility and economic benefits; that is, while corporate environmental responses require immediate capital investment, its rewards are delayed and difficult to measure (Bansal & Kistruck 2006). Companies do not commit to such targets and activities because the evidence on financial benefits remains vague. Montabon *et al*. (2007) did not find a positive correlation between corporate environmental targets and an increase in sales revenue. Hoffrén and Apajalahti (2009) also stated that improvement of efficiency can lead to the decrease in short-term cost accrued from reduced resource use but does not ensure an enhanced

longer term profit because efficiency possibly locks out the required future solutions and technologies. Ultimately, profitability is of great importance in the continued existence of the organisation rather than cost savings.

Lansiluoto and Jarvenpaa (2010) investigated factors influencing an environmental performance measurement system change with a case study of a Finnish international company. They found that all the selected environmental measures in the annual report were linked to profitability. However, correlations between environmental and financial performance are not illustrated explicitly (Schaltegger & Wagner 2006). For example, environmental and financial performance could be improved from a decrease in energy consumption and energy costs. The majority of interviewees emphasised they were driven by financial decisions within the company.

Secondly, some studies have shown simply that communicating corporate commitment to the natural environment creates a positive impression with stakeholders (Wilmshurst & Frost 2000, Milne & Patten 2002, O'Donovan 2002) and thus, it increases customers' confidence and encourages regulatory bodies to give them a continuing license to operate. In other words, potential economic returns can be generated merely by symbolic tactics.

Firms can provide valuable information through corporate reports to their stakeholders in order to shape their expectations with respect to corporate long-term financial gain (Brammer & Pavelin 2008). Voluntary disclosures are continued to ensure the firm's legitimacy is not threatened (De Villers & van Standen 2006). However, an organisation has to decide on the goal of any potential organisational response to legitimacy threats. There are three main aims of corporate response. These include gaining legitimacy; maintaining legitimacy and repairing legitimacy (O'Donovan 2002, Kuruppu *et al*.

2019). Van Staden and Hooks (2007) argued that reporting a firm's environmental targets and environmental performance against these targets is one of a range of proactive approaches to preventing a legitimacy gap because it supports the positive environmental image of a firm.

Ransom and Lober (1999) noted that an environmental goal is essential for the company's survival. However, companies setting environmental targets need to prepare for future environmental pressures from stakeholders. When a company's dependence on stakeholders is significant enough, they set targets over explicit expectations to increase the stakeholders' satisfaction. In other words, companies could use environmental target setting and disclosure as a proactive approach to preventing a legitimacy gap. Therefore, environmental target setting and reporting could be a tool used to signal the desired future image or polish the current image without making any actual significant change to improving environmental performance.

Pinkse and Busch (2013) suggested that firms may create a desired future image by expressing a commitment to a target and setting a pathway toward a level of decarbonisation without a radical change in required technology and production system anytime soon in order to accomplish a low-carbon future. To embellish the firm's current image, they can adopt short-term carbon reduction targets by applying modern technologies and yet retain current operations. In this case, companies can try to reduce as much carbon emission as possible, the remaining carbon emissions which cannot be reduced by the firm will be offset and hence, the actual carbon reduction might not have been practically significant.

Environmental issues are of great complexity and uncertainty so companies find it easier to mask their environmental liabilities (Jiang & Bansal 2003, Bansal & Kistruck 2006).

Ideally, targets should be reported transparently and the performance against them should be communicated to the public for its assessment. However, corporate carbon reporting does not provide stakeholders with increasing confidence to assess their performance. Gouldson and Sullivan (2013) noted this can be because:

> (1) companies can change the data gathering and acquisition processes, i.e., restating their previous years' data, (2) companies can adopt new emission factors and calculation protocols (3) companies can change the reporting coverage (in terms of geographic scope and the corporate activities' emissions scopes), (4) business changes (e.g., acquisitions, insourcing or outsourcing of particular business activities/functions) and (4) the adoption of new performance measures and the discontinuation of others (p. 10).

All this can potentially reduce the incentive for business to deliver on their commitments by choosing instead to manipulate impressions (Sullivan & Gouldson 2012, Gouldson & Sullivan 2013).

Furthermore, companies may remain reluctant to commit to such measurable targets (Sroufe *et al*. 2000). Edvardsson and Hansson (2005) note that some of the environmental targets are formulated in a way that makes them (i) imprecise and (ii) impossible to evaluate. Furthermore, corporate climate change targets might not be coordinated with other corporate objectives. Climate change targets tend to differ in their degrees of operationalisability and priority setting between different goals is often ambiguous. Therefore, without being sufficiently clarified, no substantial attempt can been made to identify the potential target conflicts. This contributes to insufficient target setting since they cannot be used to direct or control activities effectively.

Belkhir *et al*. (2017) found no direct association between Global Reporting Initiative (GRI) disclosure and corporate social and environmental performance in their cross-sectoral study of 40 A-level GRI reporting companies and 24 non-reporting companies over a period from 2007 to 2012. A small number of the GRI reporting companies analysed their emission data in relation to planetary boundaries, however. It is difficult to evaluate their actual performance, which might indicate that they are not integrating the GRI indicators into an effective and active social and environmental management system. They suggested that many companies report sustainability targets without sufficient provision of historical data, so it is not known whether they have met previous targets, let alone whether their performance in terms of scale and efficiency have any actual link to the planetary boundary. It appears to indicate a symbolic approach to adopting climate change strategy and practice among businesses.

Although some companies disclose their climate change targets, their corporate activities are not easily identifiable or measurable against the climate change threshold. An increase in the eco-efficiency rate does not ensure that the environmental system is retained within the absolute ecological limits while the economic system continues to grow (Hoffrén & Apajalahti 2009, Hoffrén & Korhonen 2007, Haffar & Searcy 2017). Thus, a company can reduce its environmental impact compared with the size of its operations, but the absolute level of environmental impact can continue to rise. McDonough and Braungart (1998) stated that an efficiency gain in using a resource leads to an increase in resource use because the resources saved by the increased efficiency will be used for other purposes and the resources in absolute terms will continue to rise.

Research by Liesen *et al.* (2015) on the thoroughness of voluntary GHG emissions disclosure by 431 European companies and its influence by external stakeholder pressures found that incomplete disclosures may serve symbolic legitimisation by

appearing to respond to stakeholders' pressures without providing meaningful accountable information. Their finding is consistent with legitimacy theory, showing 85% of companies disclosing GHG emissions data in an incomplete manner. The above is consistent with the Archel *et al*. (2008) claim that some firms actively exclude the more emissions-intensive parts of their business activities which might not truly reflect their actual environmental performance. Similarly, Stanny (2010, p. 4) argued that by providing partial answers to the Carbon Disclosure Project (CDP) "the firm is primarily fitting in the social and environmental expectation it would disclose enough to avoid legitimacy threats".

Given the importance of GHG emissions for climate change, unsurprisingly, firms that are subject to significant pressures for their emissions information would subsequently implement more serious management of their emissions (Borghei *et al*. 2016). Hrasky (2012) studied the sustainability and annual reports of the ASX's Top 50 companies to compare carbon emissions disclosures in 2005 and 2008. Three categories of the symbolic management approach were used to capture disclosures: (1) normative statements that expressed concern about climate change issues but not specific actions, (2) statements about climate change targets without including any specific actions and (3) statements reporting on any external awards/certifications that the company had received related to climate change.

Three categories of the substantive management approach were also identified through statements of "(1) internal corporate commitment to reduce the GHG emissions impact, (2) external initiatives to achieve a similar end; and (3) actions taken to help others to reduce their carbon footprints" (Hrasky 2012, p. 183). The author found that while carbon-intensive sectors appear to be pursuing substantive actions which are considered a moral legitimation strategy, the less intensive sectors are relying mainly on symbolic

disclosure (Hrasky 2012). However, “what appears to be a substantive action may not result in an absolute emissions reduction by the organisations” (Milne & Patten 2002, p. 375). Organisations could pick the low-hanging fruit, identified as low cost and low-risk actions, without embracing ongoing organisational mitigation strategies, operations and their impact on climate change.

Borghei *et al*. (2016) investigated the practice of voluntary GHG disclosure by non-GHG registered companies among industry sectors over the period from 2007 (after the commencement of National Greenhouse and Energy Reporting Act 2007) to 2010 (before the commencement of the Australian ETS). They found that those companies seem to achieve disclosure improvement by taking actual management actions in reducing GHG emissions instead of symbolic actions among less carbon-intensive industries. They report the forward-looking, hard to mimic information which allows stakeholders to verify claims (e.g. investment in carbon projects, redesign of process, product and services,) and to advertise their superior environmental positions, rather than softer forms of disclosure (e.g., targets to tackle GHG, education, support of green institutes and green actions) (Borghei *et al*., 2016, p. 117-118).

Legitimacy theory does not yet provide detailed insights into how institutional pressures might influence corporate operations and their target setting and reporting practices. The next section discusses institutional theory, particularly, to understand how institutional theory explains organisational sustainability and climate change-related responses and practices.

3.3. Institutional Theory

3.3.1. Definition of Institutional Theory

Institutional theory addresses the question of why many organisations facing similar institutional pressures eventually tend to adopt similar strategies and practices (DiMaggio & Powell 1983 cited in Daddi *et al*., 2019).

Institutions (e.g., NGOs, regulators, trade and employer associations) can pressure firms to address contemporary challenges, for example, climate change (Campbell 2007). Organisations' actions are, therefore, influenced by external stakeholders including government (through regulations), industry (through standards and norms), competitors (through better business models) and consumers (through loyalty or complaint). Organisational activities are selected from amongst "a defined set of legitimate options determined by the group of actors composing the firm's organisational field" (Hoffman 1999, p. 351). Sometimes, an individual organisation within the field innovates, engaging in new organisational activities to improve performance or attempt to survive in an uncertain or crisis-driven context (DiMaggio & Powell 1983). These actions become institutionalised if other organisational activities are enacted as a result. They can be costly to alter or can be copied by others resulting from the perceived success of the innovations (Haunschild & Miner 1997, DiMaggio & Powell 1983 cited in Bebbington *et al*. 2008), with potentially competitive consequences.

In accordance with institutional theory, there are various types of organisational influences and the sorts of pressure they exert can result in isomorphism. This means that organisational practices that address climate change become diffused and homogenised across the firm, perhaps due to coercion, normative pressures and mimetic processes (DiMaggio & Powell 1983). The existence of different institutional mechanisms (or

pillars) does not mean that they exclude each other but rather they are likely to operate at different levels (Higgins & Larrinaga 2014).

Coercive isomorphism arises by both internal and external stakeholder pressures on organisations. These include changes in government/regulatory mandates, NGO demands, or pressures from other organisations (DiMaggio & Powell 1983). By complying with regulations, corporate legitimacy is maintained, ensuring access to resources and ultimately maintaining their license to operate (DiMaggio & Powell 1983, Zucker 1987). Jennings and Zanderbergen (1995) suggested that regulatory-type institutions increase the diffusion of ecologically-oriented practices, but adoption is likely to be compliance-driven because the rationality for doing so is not easily diffused through coercive pressures.

Normative pressures occur from professional groups that define the standards and rules for their members. Normative pressures may result from voluntary reporting frameworks in the case of corporate social and environmental reporting (DiMaggio & Powell 1983, Daddi *et al*. 2018). Different from the regulative conception of institutions (coercive isomorphic pillar) which is based on rule setting, monitoring, recompense and punishment, normative institutional mechanisms are based on the logic that following perceived expectations is the appropriate or right thing to do to (Higgins & Larrinaga 2014). In other words, organisations engage in corporate sustainability practices through professional networks (DiMaggio & Powell 1983) without an obvious economic return because they have shared social values and norms with other industry members and therefore have to conform in order to be legitimate (Higgins & Larrinaga 2014, Berrone *et al*. 2010, Meyer & Rowan 1977).

Institutions can also be founded on a cognitive dimension. Meanings and rules are considered to be socially constructed, i.e., changes might be made by social interactions (Berger & Luckmann 1991). Therefore, the cognitive mechanism provides cultural and conceptual support of legitimacy that makes corporations' behaviour appear obvious and proper (Hoffman 1999, Scott 1995). The cognitive dimension tends to be subtle and complex, and also the most difficult to detect (Hoffman 1999). Activities are enacted in relatively taken-for-granted ways, and for reasons that may not be fully articulated. Managers are concerned with "fitting in" and doing what has been shaped as normal in various circumstances; they may not even be aware of how rationality is institutionally shaped (Milne & Patten 2002). DiMaggio and Powell (1991) argued that a better mechanism for capturing the cognitive dimension is imitation (mimetic processes). Mimetic processes are those whereby companies imitate the actions of other organisations, thus modeling themselves on similar organisations in their field (de Villiers & Alexander 2014). These companies appear to be more successful and legitimate (Tolbert & Zucker 1983) with the underlying logic of preferring to act in conventional ways (DiMaggio & Powell 1991). Jennings and Zanderbergen (1995) proposed that mimicry is more likely to influence adoption of environmentally responsible practice than normative pressure if the practice provides competitive advantage or is perceived to be an industry standard.

3.3.2. Institutional Theory–Sustainability Reporting

There are many prior studies applying Institutional Theory to explain corporate sustainability-related practices, including their environmental and social disclosure. In this section, research that seeks to understand how the pillars of isomorphism might have an impact on corporate reporting practices is reviewed.

Buhr and Freedman (2001) explored how institutional and cultural factors influenced environmental disclosure by companies in the US and Canada. Given similar social expectations in regard to the contextual importance and similar reporting requirements mandated by stock exchange commissions and Generally Accepted Accounting Principles (GAAP) in US and Canada, the authors found that there was a greater extent of mandatory disclosure in the US than Canada, most likely due to the litigious environment. American companies are encouraged to provide greater disclosure of required items in order to avoid any litigation from the omission of environmental information. In contrast, Canadian companies had greater voluntary environmental disclosure because more emphasis was placed on stakeholders and perhaps, greater awareness of the natural environment. US companies typically respond to external pressures by minimising the legal power of such threats while Canadians offer more information to explain, justify and minimise confrontation. Buhr and Freedman (2001) noted that country differences, including the political and systems and business climate, influence the different reporting practices.

In contrast, Baldini *et al*. (2018) who studied a sample of 14,174 world-wide firm-year observations in a period from 2005 to 2012 found that country-level attributes such as political system (more particularly, the strength of the legal framework) is significantly and negatively related to firm's environmental disclosure practices. It could be that in a country where the political system is strong, firms are more likely to engage in truly in ethical practices, and therefore, revealing their performance through disclosure is considered unnecessary.

Cormier *et al*. (2005) studied the environmental disclosure quality among large German companies listed in the DAX 30/DAX 70 indices from 1992 to 1998. German firms' rights and obligations are not only carefully represented in law but also their corporate

disclosure framework involves a consideration of a broad set of stakeholders. Their findings indicated that firms' environmental reporting quality is related to public and industry pressures. There is also evidence that imitation determines the degree of environmental disclosure. It is, therefore, consistent with institutional theory. Firms adopt a disclosure strategy to reduce the likely costs of regulation. The authors also emphasised that in Germany, where environmental concerns are relatively high, the potential costs from disclosing sensitive environmental information might be substantial due to the lobbying campaigns by various environmental NGOs. Hence, it might not be true in a country where the pressure to provide environmental disclosure will be low.

Aerts *et al*. (2006) studied a sample of 1058 firm-year observations over a six-year period from the largest firms in Canada, France and Germany. Their findings showed that in a given year, a firm's imitation of other firm's environmental disclosure practices in their industry was wide-spread. Nevertheless, the mimetic process is eventually enhanced in highly concentrated industries and is weakened when a firm is subject to public media exposure. More specifically, the more exposed firms are less likely to engage in imitative behaviour. The following sub-section reviews the literature focusing on institutional influences on carbon emissions reduction disclosure.

3.3.3. Institutional Theory – GHG emissions disclosure

There is a range of institutional pressures influencing issues in climate change reporting. The New Zealand Emissions Trading Scheme (NZETS) is an example of such pressures. Disclosure of corporate GHG emissions is required under emissions trading schemes, and the number of regulations is only set to increase following the Paris Agreement in 2015 (KPMG 2017). The NZETS truly reflects New Zealand's context, which is discussed in detail in Chapter Four- New Zealand's climate change commitments and

climate change-related regulations with the recent introduction of the Zero Carbon Act of 2019 and also regulatory amendments in the New Zealand Emissions Trading Scheme.

Lorenzoni and Pidgeon (2006) argued that coercive pressures in the form of strict climate change regulations may not only directly influence firms' behaviour and practices but also lead to greater societal concerns over corporate compliance and increased stakeholder scrutiny. Stokes *et al*. (2015) found a very low level of public concern on climate change issues in some large emitting countries like the US and China. Political leadership and approach to climate change play a great role in influencing companies' responses to these institutional pressures (Comyns 2018). The more stringent climate change regulation is, the greater demand for internal management of the firms' carbon emissions will be (Bui & De Villiers 2017). It has been suggested that companies need to revise their strategies to comply with the new climate change mandates or the emission trading market regulations (Boiral *et al*. 2012).

In contrast, companies in countries that did not ratify the Kyoto Protocol appear more inclined to adopt a "wait-and-see" approach (Kolk & Pinkse 2004, Pinkse & Kolk 2007, Pinkse 2007). Kolk and Pinkse (2004) investigated the top 500 multinational companies (drawn from the 2002 FT500 list) and found that only a limited number were already active in emission trading and offset projects. However, a much larger number of companies were seen to be waiting for the emission trading scheme market to mature enough to allow for trading and offsetting. There were different corporate responses to international environmental agreements (Kolk & Pinkse 2007) in countries that ratified and did not ratify the Kyoto Protocol.

In countries that made a commitment to reduce carbon emissions at the agreed level, national governments set similar goals for industries contributing significantly to climate

change. In contrast, countries that did not ratify the Kyoto Protocol were not expected to fulfill a regulatory expectation and relied on voluntary targets stimulated by NGOs. Governments, however, have greater power to enforce agreements with companies than NGOs counterparts.

It has been found that companies with headquarters located in Kyoto Protocol ratifying countries have disclosed GHG emissions more extensively than companies that are headquartered in non-ratifying countries, even if they have operations in ratifying countries (Kolk & Pinkse 2007). Companies in developed countries also report more on climate change issues compared to those in developing countries (Amran *et al*. 2014). Rankin *et al*. (2011), however, found no significantly positive association between installations regulated under environmental trading schemes (ETS) and the reliability of GHG reporting by Australian firms.

In their research of four multinational oil and gas companies, Escobar and Vredenburg (2011) argued that the corporations did not adjust their responsive practices to international climate change agreements (e.g., the Kyoto Protocol or the Rio Summit). Rugman and Verbeke (1998) reasoned this was because they lack clear regulations, and an international enforcement system. These protocols rely heavily on national regulations and individual national commitment to comply with global targets. Corporations are more likely to respond to sustainable development pressures that are technical in nature (such as climate change and renewable energy) rather than less technical pressures (such as social investment or biodiversity) because the benefits of the former are more apparent for managers. Escobar and Vredenburg (2011)'s findings confirmed that coercive isomorphism and normative isomorphism do not occur at the global level because sustainable development is largely stakeholder-driven rather than broad social pressures.

Haque and Ntim (2018), investigated the effect of environmental policy (in particular, the UK's Climate Change Act) and sustainable development frameworks such as the GRI and UN Global Compact (UNGC) on the environmental performance (carbon reduction initiatives and actual carbon performance) of UK listed companies. Their findings indicate a positive relationship between environmental policy/sustainable development frameworks and carbon reduction initiatives. They also found that environmental policy is not positively associated with environmental performance because of a symbolic response of companies to the improvement of sustainable performance.

Voluntary sustainability reporting guidelines and methodologies (such as the Greenhouse Gas Protocol and ISO 14061-1) have been designed to ensure that reporting firms can provide reliable and standardised information about their performance. Incomparability in these different methodologies and guidelines to calculate GHG data might exist, however (Andrew and Cortese 2011). Calculation varies in different institutional contexts, especially, if defined by regulation. These variations might lead to difficulties in calculating and implementing corporate emissions data, let alone, finding meaningful performance comparability among different firms.

By seeking international environmental certification, companies demonstrate a superior commitment to their environmental management system. However, there is little evidence that ISO certification has real efficacy in reducing GHG emissions and improving environmental performance (Jiang & Bansal 2003, Boiral 2007). There are a least two possible explanations for why this might be so; (1) companies have not yet had time to truly integrate climate change concerns into their environmental management system and/or (2) the environmental management system is obtained to improve firm's reputation rather than their actual performance (Boiral & Gendron 2011).

De Gruyter *et al*. (2015) surveyed different stakeholder groups, including accounting professionals, environmental NGOs, environmental consultants, regulators, institutional investors, researchers and media to examine how stakeholder pressures influence corporate climate change disclosure practices in Australia. De Gruyter's findings indicate that institutional investors and regulators are perceived to be the most powerful stakeholders. There is also a positive relationship between media attention and firm's responses via CDP reporting.

Kolk *et al*. (2008) analysed responses by the Financial Times 500 international corporations to investigate the effectiveness of the CDP's institutional strategy in using institutional investors (considered the most powerful influencers) to urge firms to make a more extensive disclosure in their climate change performance reporting. An impressive response rate to the CDP from worldwide firms might reflect successful institutionalisation of climate change efforts and appears to indicate a global convergence of intentions. However, Kolk *et al.*'s findings also indicate a lack of comprehensive carbon data in the disclosures they analysed. It is difficult to gain insight into the nature of reported emissions, let alone companies' actual performance and achievements. Kiernan and Advisors (2008) also argue that even experienced climate change analysts find it very hard to make sense of firm GHG emissions data reported as part of the CDP. It also raises the question of the usefulness of these data for investors in making their investment decisions.

Pinkse (2007) studied the drivers of multinational corporations' participation in emission trading schemes. He found that industry pressure and product and process innovations are the main drivers for the companies, especially companies in the energy-intensive industries, to participate in these climate change projects. Okereke (2007) explored the motivations, drivers, and barriers to the management of carbon emissions. He found

numerous factors influence companies' carbon management programme choice. These included location, sector, operational aspects, historical performance, and the unique challenges being faced by the companies. These sampled companies also tended to indicate that they no longer perceive climate change as the matter of incidental business concern but as one that could radically change the nature of business operations.

Comyns and Figge (2015) investigated how regulatory pressures under the EU emissions trading scheme (coercive force) and Global Reporting Initiative (GRI) reporting standards (normative force) influence the quality and quantity of multinational oil and gas companies' disclosure practices. They found European companies seem to imitate their counterparts' reporting practices and therefore do not have a high level of reporting quality.

The level of societal concern is also likely to influence whether companies will feel more pressure to set and report GHG emissions reductions target to their stakeholders in their specific contexts. Escobar and Vredenburgh (2011) suggested responding to sustainable development pressures such as climate change creates uncertainty because the cost and positive impact of any responsive initiative on the company's financial performance are not certain. The companies, therefore, can imitate competitive and proven strategies that are worth adopting and that reduce the uncertainty or complexities associated with the sustainable development pressures these organisations face.

There are two types of strategies: the enterprise strategy (What is the role of the business in society?) and the business level strategy (How shall we compete in each business?). The enterprise strategy directly deals with the environmental and social performance embedded in the definition of a sustainable development-oriented corporation (Hart and Milstein 2003). The business-level strategy aims at providing opportunities to either

increase shareholder value or preventing it from diminishing while increasing corporate environmental and social performance (Hart 1997, Hart & Milstein 2003). Business-level strategies include green consumerism (selling green products); reduced legal liability (actions to avoid litigation costs or the enactment of stringent regulation); reduced cost (approach to gain financial strength from greater efficiencies) and finally, reduced risk exposure (prevent non-technical issues from straining the business-society interface). The following section explains rationales for utilising institutional theory and legitimacy theory in this research.

3.3.4. Rationales for institutional theory and legitimacy theory

Social-political theories, including institutional theory and legitimacy theory, are relevant to this research because they provide a mechanism by which to explain corporate response to climate change as it evolves over time through societal changes. Institutional theory and legitimacy theory can complement each other while examining influences on climate change reporting.

Legitimacy theory offers an explanation of the motivations for climate change disclosure and can be seen as a reaction to external pressures, especially while climate change is a subject of intense public debate (Hahn *et al*. 2018). Legitimacy theory is limited to categorising motivations at the firm-level. In contrast, institutional theory links different corporate response outcomes to the influences of institutional pillars at the field-level. The theory represents institutional complexity (i.e., contextual and multilevel political, cultural and social aspects of organisational behaviour) at the field-level and is characterised by multiple demands from different stakeholders (Herold 2018). Institutional theory distinguishes different kinds of institutions which all create implicit

or explicit influences to the adjustment process and formulation of organisational behaviours and practices (Scott 1995).

Higgins and Larrinaga (2014) pointed out the overlap between institutional theory and legitimacy theory literature in social and environmental accounting, which is useful to investigate a particular social occurrence. Legitimacy is an element of institutions which enables organisations to attract resources that are employed in achieving organisational objectives (Tilling 2004). Legitimacy can be managed through a diverse range of theoretical lenses including institutional theory (Oliver 1991, Suchman 1995, Sonpar *et al*. 2010). Organisations are driven not only by their aim to maximise profits but also by the different institutional expectations (e.g., CDP, institutional investors or governments). Organisations need to progressively conform their behaviours to these requirements (Meyer & Rowan 1977, Powell & DiMaggio 1991).

Some companies might view corporate environmental reporting as an ineffective tool to achieve legitimacy. They do not appear to have abandoned corporate environmental disclosure and continue to engage in some form of environmental reporting, however (O'Dwyer 2012, Aerts *et al*. 2006). Institutional theory could explain why corporate environmental disclosure exists in the absence of legitimacy threatening events or active demands of stakeholder groups. That is why the actions of a firm should be judged legitimate if they are appropriate within a given institutional context.

Firms need to consider their institutional context which might be "(1) what other firms (in the same sector/country) do in their environmental reporting (imitation), (2) what the firm has done in the past (routine) and (3) relevant regulations and laws governing disclosure (institutions)" (Cormier *et al*. 2005, p.5). Therefore, when social disclosure is analysed from an institutional viewpoint, organisational legitimacy appears to be

constructed and primarily influenced by the external environment (DiMaggio & Powell 1983, Meyer & Scott 1983). While corporate legitimacy reflects societal beliefs, values and norms, legitimacy could be viewed as institutionalisation which is a process of accumulation that makes beliefs eventually accepted without much thought (Sonpar *et al*. 2010, Suchman 1995, Meyer & Rowan 1977, Beelitz & Merkl-Davies 2012, p. 102).

While legitimacy in the social and environmental and accounting literature assumes a manipulative logic based on self-interest that companies can influence the public policy process to reduce their external social, political and economic pressures, institutional theory allows different motives to be investigated in their context based on the logic of appropriateness, i.e., what behaviour is acceptable, (Scott 2013). Therefore, it is more useful to apply not only legitimacy theory but also institutional theory in explaining why given practices of sustainability disclosure become common practice in a particular context and explain pressures that have the potential to institutionalise the practice of climate change-related reporting. By using the lenses of both institutional theory and legitimacy theory, a richer justification for changing organisational responses through encompassing political, social and institutional context might be obtained.

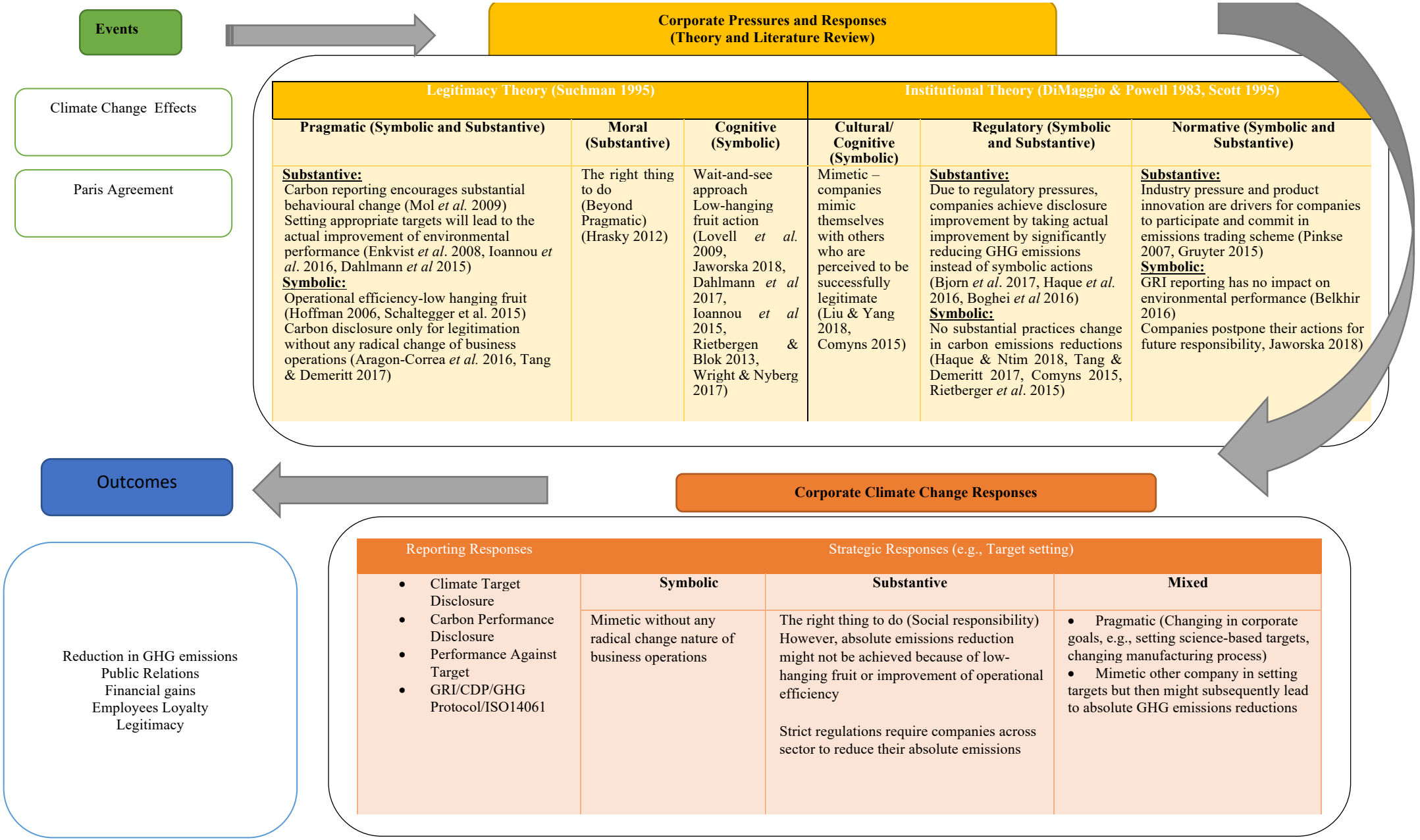
3.4. Theoretical Framework for This Study

While corporate legitimacy reflects societal beliefs, values and norms with which organisations need to comply in order to renew a license to operate, institutional theory could identify the different institutional expectations for organisations to be legitimate. This is in contrast to legitimacy theory, which is limited to categorising motivations at the firm-level. Institutional theory, however, represents contextual and multilevel political, cultural and social aspects of organisational practices at the field level. This

study argues that organisations can disclose and set emissions reduction targets to strategically respond to both institutional pressures and legitimacy pressures.

In addition, a portion of the literature has emphasised the role of climate responses, more specifically climate target setting in shaping corporate image/legitimacy (e.g., Pinkse & Busch 2013, Gouldson & Sullivan 2016). Ashforth & Gibbs (1990) emphasised two general means by which companies seek legitimacy; substantive management and symbolic management. Symbolic management highlights the symbols that are used in portraying corporate image or claims to legitimacy so they can appear consistent with social values and expectations. Substantive management seeks to fulfil expectations of stakeholders (e.g., meeting regulatory requirements), or altering suppliers, resources (e.g., changing from fossil fuel use to renewable energy), or altering socially institutionalised practices (e.g, setting and achieving science-based climate change targets). Figure 5 below presents the theoretical framework developed for this study.

Figure 5: Theoretical Framework for this study



3.4.1. Legitimacy theory

As I noted in Section 3.2.2, legitimacy consists of three different dimensions. These are pragmatic legitimacy (sustained as long as stakeholders believe they will receive benefits directly or indirectly from the company's activities (e.g., a dividend payment, innovation which might lead to environmental benefits), moral legitimacy (the right thing to do) and cognitive legitimacy (a new environmental action/policy might make managerial jobs more difficult than traditional business decision-making models which emphasise on profit maximisation). Here, I briefly recap the main theoretical elements and tie them to the prior literature on organisations and climate change responses.

3.4.1.1. Pragmatic dimension

Many companies consider developing a climate change strategy to be a crucial business practice for their competitive benefit which can bring tangible benefits or cost reductions (Enkvist *et al.* 2008). Because of their environmental visibility (Dahlmann *et al.* 2015) and the financial significance of carbon emissions reductions (Ioannou *et al.* 2016, Tang & Demeritt 2017), companies with higher levels of emissions are mostly likely to set ambitious environmental targets. These stretching targets appear to be associated with high level of R&D investments which indicate their internal capabilities for innovation in order to reduce their GHG emissions.

Herold *et al.* (2018) argue that substantive activities reflect corporate actions toward reducing GHG emissions are in line with cost reductions that result from enhancing operational efficiency, which is mainly expressed as energy-efficiency (Schaltegger & Hörisch 2015, Busch & Schwarzkopf 2013). By improving the efficiency of operational processes, companies could reduce their costs and improve their environmental performance simultaneously (Lyon & Maxwell 1999). A number of corporations have seen a climate change strategy as important

to respond to stakeholder pressures, constraining their GHG emissions impact and disclosing performance on a voluntary basis (Pinkse & Busch 2013).

Hoffman (2006), however, suggested that operational efficiency reflects the corporate symbolic approach in taking low-hanging fruit actions-such low cost, low risk actions without achieving any considerable absolute emissions reduction. In addition, Aragon-Correa *et al.* (2016) suggested that domestic firms have moved their manufacturing to countries with lower levels of environmental regulations and lower standards in order to retain competitiveness. Companies may claim carbon-related achievements for the legitimation of their environmental activities that are not associated with their actual corporate action (Schaltegger & Hörisch 2015, Aragon-Correa *et al.* 2016).

3.4.1.2. Moral dimension

Moral legitimacy asks whether a particular corporate action and practice is the right thing to do (Suchman 1995). This perspective requires looking beyond pragmatic evaluations. Hrasky (2012) found that while carbon-intensive sectors appear to have been pursuing substantive actions which can considered as resulting from a moral legitimation strategy, the less intensive sectors were relying mainly on symbolic disclosure (Hrasky 2012).

To date, there has been little consideration given to corporate moral legitimacy behaviour. This appears to be a result of an absence of a private and transactional approach to evaluating corporate climate-related practices (Bowen 2019). The evaluation depends on a certain social group, and is, therefore, related to their shared values (Mele & Armengou 2016). Moral judgments in regards to social and environmental impacts of economic activity might be different due to the existence of significant national, regional, and organisational variations in moral attitudes that contribute to legitimacy (Thomas & Lamm 2012). Additionally, even within organisations that embrace an ethical climate, translating attitudes into organisational

action is always challenging (Arnaud & Schminke 2012 cited in Hyatt & Berente 2017). Corporate climate change practice is, therefore, not often advocated as based on compelling moral obligations but a mix between profit-seeking and moral rationale.

3.4.1.3. Cognitive legitimacy

Company managers might expect that introducing sustainability practices will make their job more complex than traditional business decision-making models which emphasise profit maximisation, at least in the short-run. Therefore, more tangibly perceived near-term impacts of cognitive burdens is more likely to influence managers' acceptance of or resistance to sustainability strategies and initiatives. Despite management concern over the consequences of climate change and also understanding the tension between meaningful engagement with the climate change issue, short-term profitability was still the key focus because managers were afraid of being replaced if they were not to meet market demand (Wright & Nyberg 2017).

Corporate management can actively communicate its carbon targets and set a pathway toward decarbonisation in order to create corporate recognition without any substantive organisational change (Hoffman 2006, Margolick & Russel 2001, Pinkse & Kolk 2009). For example, the timeframe of several decades is considered meaningless because there will be too many uncertainties over time. In this case, the technology to accomplish a low carbon future is not yet available on a commercial scale. These wait-and-see strategies might also mean that companies do not have any intention of radically changing their current business practices anytime soon. Furthermore, companies can set CO_2 emission reduction targets measured against turnover (i.e., intensity targets) which do not require substantial efforts since no further investments were required or firms only needed to implement "low-hanging-fruit" actions (Rietbergen & Blok 2013). Therefore, actual emissions reduction might not take place (Lovell *et al.* 2009, Jaworska 2018).

3.4.2. Institutional theory

Again, here, I briefly recap institutional theory and how it might inform prior work on corporate climate change behaviour. Institutional pressure consists of three types, namely regulative, normative and cognitive (DiMaggio & Powell 1983). Prior studies have employed institutional theory to explain corporate sustainability-related practices (e.g., Baldini et al. 2018, Cormier et al. 2005, Aerts et al. 2006) and also climate change practices (e.g., Boiral et al. 2012, Escobar & Vredenburg 2011, Haque & Ntim 2018, Pinkse 2017, Kolk et al. 2008). These studies suggest that organisations may strategically respond to institutional pressure from the regulatory requirement (coercive isomorphism), normative pressures (e.,g industry association, voluntary reporting framework, corporate climate change coalition) and mimicking other organisations' practices (cognitive dimension). Institutional theory focuses on the role of the institutional environment in affecting organisational behaviour and the fact that a firm has to follow the institutional rules in order to maintain/gain legitimacy (DiMaggio & Powell 1983).

3.4.2.1. Cognitive pressures:

Liu and Yang (2018) determined that companies within the resource extractive industries tend to imitate the company that is perceived to be the most successfully legitimate following the launch of the European Emissions Trading Scheme and the Climate Change Act. Comyns (2015) investigated how regulatory pressures under the EU emissions trading scheme and Global Reporting Initiative reporting standard influenced companies in the oil and gas sectors to report their carbon data. They found companies seem to imitate their counterparts' reporting practices, rather than engage in substantive organisation change.

3.4.2.2. Normative pressures:

Pinkse & Busch (2013) suggested industrial competitors put pressure on companies once carbon norms were created as the industry standard so companies need to adopt carbon

practices which could contribute to their competitive advantage. Cormier *et al.* (2005) studied environmental disclosure quality among large German companies. Their findings indicate that corporate environmental disclosure is related to public pressures as well as industry pressures. Companies adopt a substantive disclosure strategy to reduce the likely costs of regulations. De Gruyter *et al.* (2015)'s findings show institutional investors and regulators are perceived to be the most powerful stakeholders influencing corporate climate change disclosure practices in Australia. Pinkse (2007) found industry pressure and product and process innovations are the main drivers for company participation in emissions trading schemes, especially those in energy-intensive industries. However, Belkhir *et al.* (2017) examined the relationship between Global Reporting Initiative disclosure and carbon emissions performance and found that GRI reporting has no direct impact on emissions performance.

3.4.2.3. Regulatory pressures (coercive isomorphic mechanisms):

Government was considered to be powerful stakeholders and there is much pressure from a Government to address climate change. Bjorn *et al.* (2017) examined 40,000 corporate sustainability reports from 2000 to 2014 in terms of references made to ecological boundaries. They found a tenfold increase in the number of corporate references made to the planetary boundaries concept which coincides with the publication of the Copenhagen Accord. Borghei *et al.*'s (2016) findings showed that after the commencement of the National Greenhouse and Energy Reporting Act of 2007 and before the commencement of the Australian ETS, less carbon-intensive companies in the sample seemed to achieve disclosure improvements by making actual improvements. They do so by significantly reducing GHG emissions, rather than taking a symbolic approach.

However, improvement in disclosure might or might not lead to substantial change in corporate practices with regard to carbon emissions reductions. Haque and Ntim's (2018) findings

indicate that environmental policy is not positively associated with environmental performance because of corporate symbolic responses to the improvement of sustainable performance. This is consistent with studies by Tang & Demeritt 2017, Rietbergen *et al.* 2015 and Comyns 2015 which show that regulatory pressures might not lead to a substantial change in corporate environmental performance.

It is important to note that businesses can choose more than one strategic responses or tactic in resolving legitimacy and institutional pressures. For example, shareholders might require companies to set their carbon emissions reduction targets in line with international goals (such as via the Paris Agreement) as well as reporting targets and performance against the targets. The company can attempt to meet the reporting requirements, assuming that improvement of carbon disclosure subsequently leads to improvement of carbon performance or at least, allows them to manage their investor's relationships. However, the same company might be reluctant to set science-based targets as they know with certainly that it would be difficult for them to meet the targets of if they have no clear idea of how to achieve them. Alternatively, in order to meet science-based targets a firm might need to change their business model or reduce their profit, a strategy which conflicts with the traditional business concerns that privileges shareholder interests.

3.5. Conclusion

This chapter introduced institutional theory and legitimacy theory. Institutional theory addresses the question of why organisations facing similar institutional pressures will eventually tend to adopt similar strategies. The process of coercive isomorphism, normative pressures and mimetic processes are taken into consideration to explain organisational behaviour. Coercive pressures in the form of formal climate change regulations, for example, the Emissions Trading Scheme, may directly affect companies' behaviour because regulatory

compliance is of great importance for companies to maintain their legitimacy. Although New Zealand's ETS is the primary tool underpinning its domestic action to reduce emissions, these companies might not be willing to immediately justify their actions to meet the global temperature target of 2ºC, mainly because the national target is not consistent with the global target. However, companies could implement some emissions reduction initiatives to prepare for further upcoming climate legislation.

Normative pressures occur from professional groups who define the standards and rules for its members, for example, voluntary reporting frameworks and green certifications. Companies could receive pressure from shareholders who demand accredited certification based on ISO standard that might improve their environmental performance, particularly, to reduce their GHG emissions. On the other hand, companies might not truly integrate climate change concerns into their environmental management system. Instead, these certifications might be used to improve company image.

Mimetic processes are those whereby companies imitate their counterparts' competitive and proven strategies in order to reduce the uncertainty and complexities associated with climate change these companies face.

It is clear that companies need to maintain their legitimacy in order to maintain their social license to operate. The growing concern of society about climate change has encouraged them to voluntarily disclose information about their climate-related initiatives and performance. Companies can select substantive management approaches and symbolic management approaches to maintain their legitimacy.

CHAPTER 4 – NEW ZEALAND'S CLIMATE TARGET COMMITMENT, REGULATIONS AND EMISSIONS TRADING SCHEME

4.1. Introduction

In this chapter, New Zealand's climate change target commitment, climate change-related regulations, and the New Zealand Emissions Trading Scheme (NZ ETS) will be analysed. To understand corporate responses to climate change in New Zealand, first, it is important to introduce the specific details of New Zealand's greenhouse gas profile and their importance to the national economy. This provides an important foundation for understanding the uniqueness and complexity of climate change in New Zealand.

Second, New Zealand's climate change-related regulatory context and reform provides an understanding of how this might influence public and corporate opinion of regulation and policies for emission reductions. The New Zealand government's response to climate change (including New Zealand's climate change policy and its commitments to international negotiation on climate change) is quite weak. It lags behind what scientists and the IPCC recommend. The absence of robust policy or a carbon pricing framework provides little direction for formulating corporate responses to climate change.

Third, another main driver of New Zealand companies to set and disclose emissions reduction targets is industry pressure. In particular, the Climate Leaders Coalition and the voluntary Certified Emissions Management and Reduction Scheme (CEMARS) might act as a normative force influencing corporate climate change target setting and reporting practices.

Section 4.2 of New Zealand's Greenhouse Gas Emissions Profile provides a brief introduction to the New Zealand economy and the country's unique emissions profile among developed

countries. The New Zealand Emissions Trading Scheme (NZ ETS) is discussed in Section 4.3, drawing on a definition of the ETS and how it works in practice, as well as the NZ ETS's historical and current regulations. Also discussed will be the Government's selection of the ETS over the carbon tax, the use of international carbon units to meet the national and corporate climate change obligations, the phase-down of industrial free allocation units and emissions unit pricing. In Section 4.4, New Zealand's Emissions Reduction Targets are presented with a discussion of national emissions reduction targets through the Kyoto Protocol commitment, the Paris Agreement, and the Zero Carbon Act. In the following section, Section 4.5, some of the normative forces, for example, the Climate Leaders Coalition and some carbon reduction and neutrality certification in New Zealand is discussed to explore the possible influencing factors on corporate target setting and reporting practices. This chapter is summarised and concluded in Section 4.6.

4.2. New Zealand's Greenhouse Gas Emissions Profile

4.2.1. New Zealand's Economy

New Zealand's gross domestic product (GDP) for the year 2018 was US$145,643 million (equal to NZ$214,180 million) and the GDP per capita was US$42,207 or NZ$62,069 (Stats NZ 2019). New Zealand's economy has increased at an average rate of 2.7 percent per annum since 1990 (Reserve Bank of New Zealand 2019).

The New Zealand economy has significantly relied on exports from its primary sectors (agriculture, horticulture, forestry, mining and seafood industries) and also tourism, which contribute nearly 8 and 6 percent respectively towards total GDP (Ministry for the Environment 2018a, 2018b).

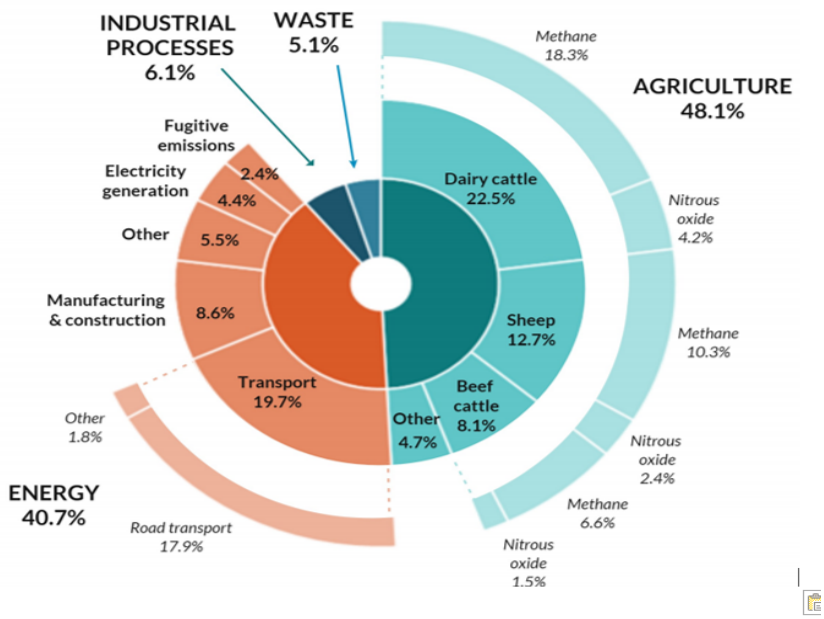
New Zealand has a small population of 4.9 million people who live across a long, narrow and mountainous country and are dependent on fossil fuel transportation. Increases of 23.1 percent

in New Zealand's gross GHG emissions since 1990 is due to strong economic and population growth. The energy (including transport) and agriculture sectors dominated contributions to emissions in 2017, with a total of 88.8 percent (Ministry for the Environment 2019d).

4.2.2. New Zealand's Greenhouse Gas Emissions Profile

The country's emission profile (presented in Figure 6 below) is unconventional among developed countries, with agriculture generating nearly half (48.1 percent of total country emissions) and combustion of fossil fuels for energy generation (40.7 percent) such as Transport and Electricity and Heat production (Ministry for the Environment 2019d). This is in contrast to other developed countries, where agriculture sector emissions only account for an average of 12 percent of gross emissions (NZAGRC/PGGRC 2015). In the agriculture sector, two main sources of GHG emissions (methane and nitrous oxide) have a greater impact on global warming (The Global Warming Potential) than carbon dioxide (GHG Protocol 2019) (See the Appendix –Section 7).

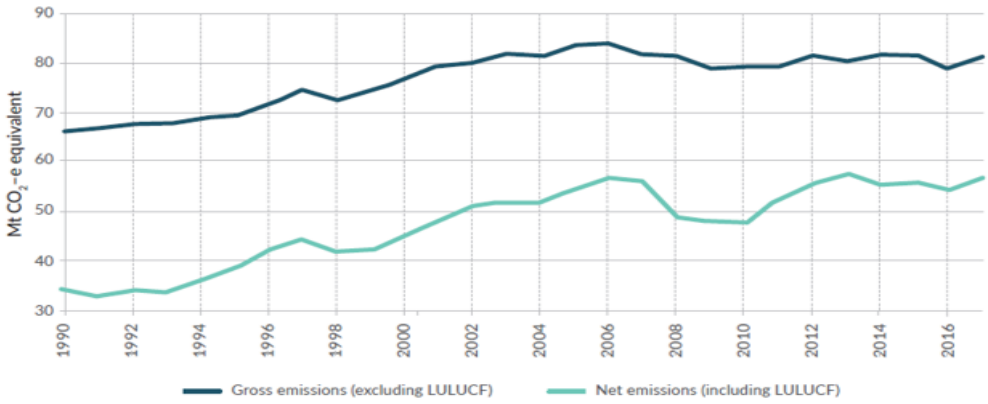
Figure 6: New Zealand's Greenhouse Gas Emissions Profile



Source: Ministry for the Environment (2019d)

In 2017, the national gross GHG emissions (excluding forestry) in New Zealand were 80.9 million tonnes of carbon dioxide equivalent (Mt CO_2 eq). Over a period of 27 years, this has increased 23.1 percent (or 15.1 Mt CO_2 eq), from the 1990 level of 66.7 Mt CO_2 eq (Ministry for the Environment 2019d). This increase can be partially explained by population growth, which had increased 37 percent from 1990 to 2017. GDP growth over the same period was from 45.52 billion USD in 1990 to 205.9 billion USD in 2017, an increase of 352 percent (Stats NZ 2019). New Zealand's gross emissions are expected to rise to 23.8 percent by 2020 and 19.6 percent by 2030 as compared to the 1990 level (Ministry for the Environment 2017b). A graphic representation of New Zealand's gross and net emissions appears as Figure 7 below.

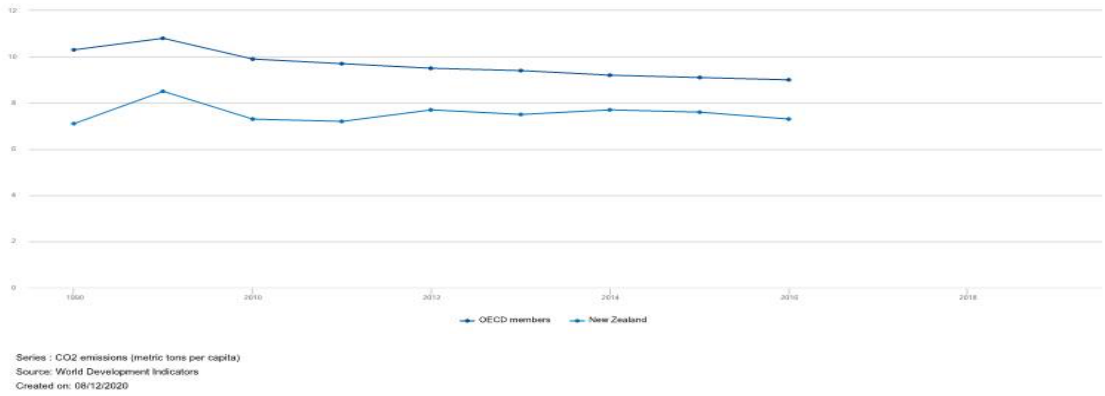
Figure 7: New Zealand's Gross and Net Emissions from 1990 to 2017



Source: Ministry for the Environment (2019d)

New Zealand's CO_2 emissions in 2016 were 7.3 metric tonnes per capita, which is lower than the OECD countries' emissions average of nine metric tonnes per capita however (World Bank 2020). A comparison of New Zealand's volume is plotted against those for OECD member states is presented as Figure 8 below. New Zealand's CO_2 emissions per capita showed a slight increase of about three percent as compared to the 1990 level of 7.1 metric tonnes per capita.

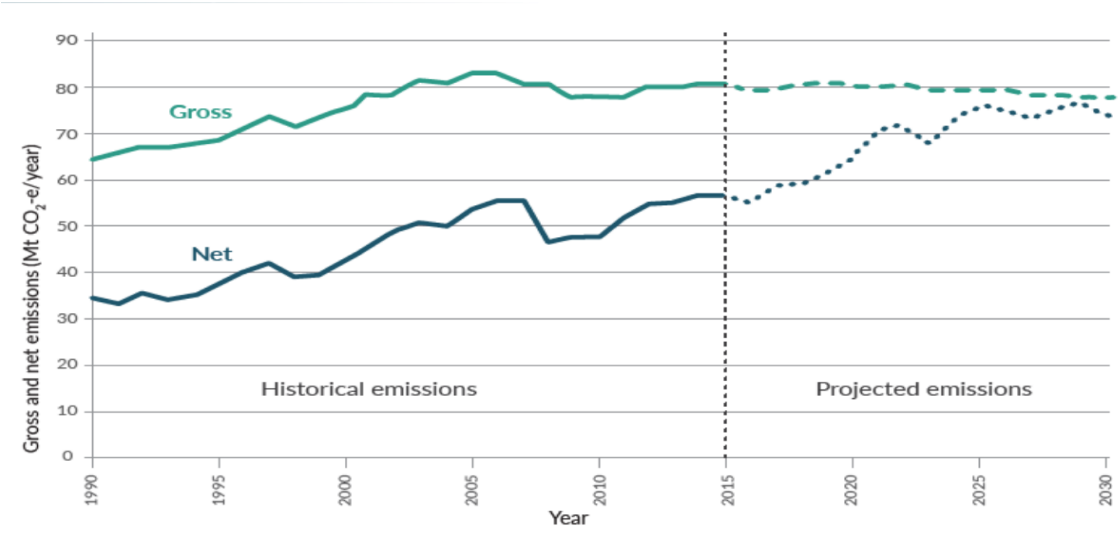
Figure 8: New Zealand and OECD's CO2 Emissions (metric tonnes per capita)



Source: The World Bank (2020) – World Development Indicators

The country's net GHG emissions (including forestry) in 2017 were 56.9 Mt CO_2-e which had increased 64.9 percent (or 22.4 Mt CO_2-e) above the 1990 level of 34.5 Mt CO_2-e. This was due to increases in (i) gross emissions; and (ii) the volume of forests being harvested and a decrease in the number of trees being planted (Ministry for the Environment 2019d). The projected rise of net emissions is at 86.5 percent above 1990 levels by the end of 2020 and 112.5 percent by 2030 (Ministry for the Environment 2017b). A graphic representing New Zealand's historical and projected GHG emissions from each sector over a period from 1990 to 2030 appears as Figure 9 below:

Figure 9: New Zealand's Historical and Projected GHG Emissions, 1990 – 2030



Source: Ministry for the Environment (2019d)

The country's emissions are made up of approximately 44.6 percent of carbon dioxide, 42.2 percent of methane and 11.3 percent of nitrous oxide in 2017 (Ministry for the Environment, 2019d). Table 4 presents the percentage change in the various gas emissions over the nearly 30 year period from 1990 to 2017.

Table 4: New Zealand's Gross Emissions by Gas in 1990 and 2017

Direct greenhouse gas emissions	kt CO_2-equivalent		Change from 1990 (kt CO_2-equivalent)	Change from 1990 (%)
	1990	2017		
CO_2	25,455.2	36,023.7	10,568.6	41.5
CH_4	32,150.0	34,132.1	1,982.1	6.2
N_2O	7,133.2	9,116.5	1,983.3	27.8
HFC_s	0.0	1,505.7	1,505.7	NA
PCF_s	909.9	60.5	-849.5	-93.4
SF_6	20.0	15.0	-5.0	-24.9
Gross, all gases	65,668.3	80,853.5	15,185.2	23.1

Note: Gross emissions exclude net removals from the LULUCF sector. The per cent change for HFCs is not applicable (NA) because no emissions of HFCs occurred in 1990. Columns may not total due to rounding. Percentages presented are calculated from unrounded values

Source: Ministry for the Environment (2019d)

CO_2 emissions have increased by 41.5 percent as compared to the 1990 level, reflecting the increases in emissions from the energy sector. These are mainly from transport, the chemical industry and food processing, and are the largest contributors of CO_2 to New Zealand's gross emissions (accounting for between 87 percent and 89.1 percent of gross emissions). The increase in emissions from the energy sector is 38.2 percent, mainly due to a 93.4 percent increase in emissions from road transportation and a 193 percent increase in emissions from food processing, beverages and tobacco (because of increasing demand for transporting people and food production for domestic use and population growth of 42 percent since 1990). New Zealand has a high degree of renewable energy use, however. According to the Ministry of Business, Innovation and Employment (2018), the proportion of power generation from

renewable sources was 81.9 percent, primarily hydro generation in 2017. The Energy Efficiency and Conservation Authority (2019) sets the New Zealand Energy Strategy (2011 – 2021) and reaffirms a commitment to the goal of generating 90 percent of electricity from renewable resources by 2025.

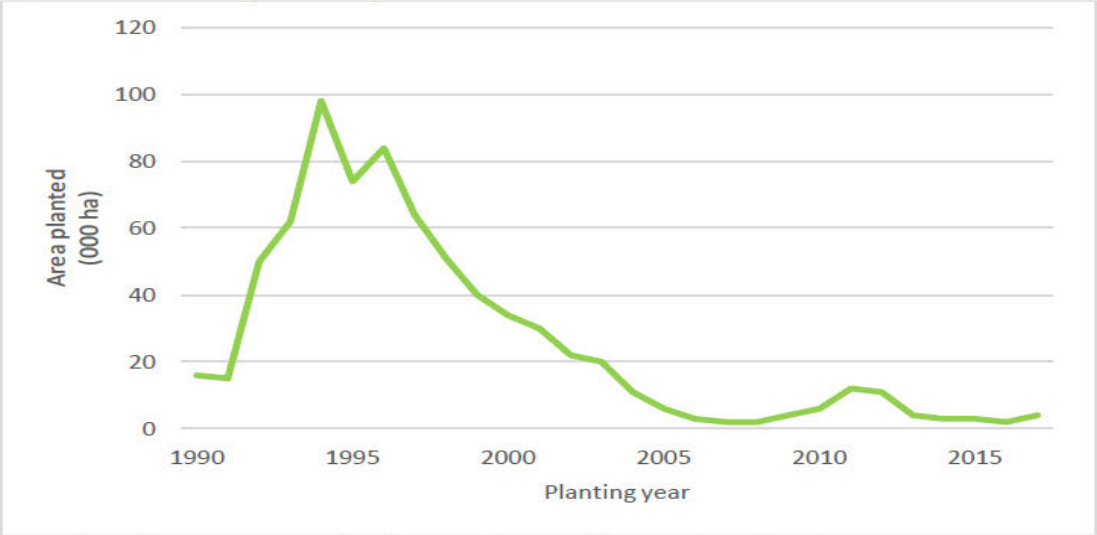
Methane emissions (CH_4) from livestock digestive systems made up the second greatest proportion of 2017 gross emissions, contributing nearly 50 percent of the gross emissions and increased by 6.2 percent from the 1990 level. Nitrous oxide (N_2O) from soils and the application of nitrogenous fertilisers has increased by 27.8 percent as compared to the 1990 level. Although it accounts for only 11 percent of gross emissions, N_2O in the atmosphere prevail for about 120 years.

There are also limited viable options for reducing emissions in agriculture, at least in the short term, because (1) there have not been sufficient scientific studies to test, track and reduce biological GHG emissions on farms to commercialisation and (2) technology (for example, inhibitors) are not confirmed to be commercially available (in terms of direct cost implications, market responses to any concern about feed additives and residues). These limit New Zealand's ability to reduce a large amount of methane and nitrous oxide while still needing to produce foods to feed a global population (Ministry for the Environment 2015, Agriculture Greenhouse Gas Research Centre 2018).

Over the period of 1990 to 2017, emissions from agriculture increased by 13.5 percent. This was due to the near doubling of dairy cattle populations since 1990 (the number of dairy cattle in 1990 and 2017 were 3,302,377 and 6,618,800, respectively) and to an increase of 627 percent in the use of fertiliser (since 1990, the annual application of nitrogen via fertiliser has increased from 59,000 tonnes in 1990 to 429,000 tonnes in 2015) (StatsNZ 2019).

New Zealand's forestry currently provides a net carbon sink. Net emissions include gross emissions combined with removals from the Land Use, Land Use Change, and the Forestry (LULUCF) sector. Trees absorb carbon dioxide from the atmosphere as they grow. In other words, historical planting rates and harvesting cycles influence the amount of carbon dioxide removed (Carver *et al.* 2017).

Figure 10: New Zealand's Historical Forest Planting in the Period of 1990 to 2017



Note: ha = hectares.

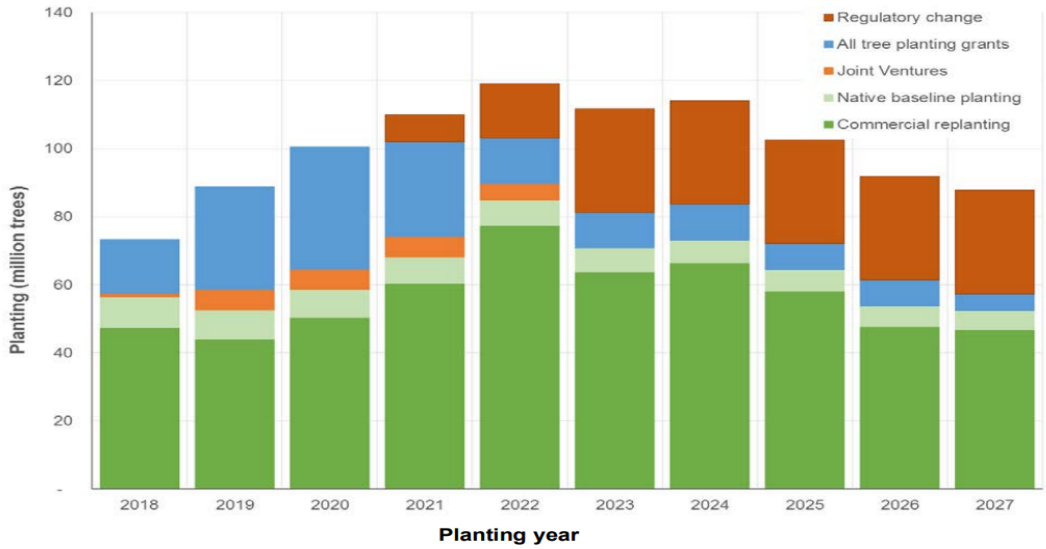
Source: Ministry for Primary Industries (2019)

As shown in Figure 10 above, forest planting peaked in the 1990s and sharply declined until 2010. These changes resulted from alterations of government forestry policies related to plantation forestry. In the 1990s, the government attempted to sell state-owned forests to the private sector in order to facilitate Treaty Settlements with iwi (NZIER 2017). During the same time period, the tax regime favoured tree planters because the Government focused on forestry as a development tool for regions, therefore, increasing forest planting (Ministry for the Environment 2017). During the period from 2008 to 2012, there was a slight increase of planting tree due to the introduction of the first Afforestation Grant Scheme, Emission Trading Scheme and the Permanent Forest Sink Initiatives. However, after 2012, the decaying rate of new forest planting has been attributed to the low price of carbon in the NZ Emission Trading

Scheme (Ministry for Primary Industries 2019). Future higher carbon prices are expected to increase the economic incentives for afforestation (Carver *et al.* 2017).

The Ministry for the Environment (2017c) projected that net national emissions will rise to 86.5 percent above 1990 levels by the end of 2020 and 112.5 percent by 2030. One of the main reasons for the net emissions increase is the majority of plantation forests established in the 1980s and 1990s will reach maturity and will be harvested. Based on different removal scenario assumptions of carbon prices, forest harvest age and timing, the average annual rates of deforestation and afforestation from 2016 to 2030 could range from 2,300 to 14,200 hectares, which equates to sequestration rates of around 6.1 Mt CO_2 per year. This is much lower than the annual sequestration rate during the period of 1990 to 2015. Between 1990 and 2015, the annual rates of deforestation and afforestation were 24,061 hectares. This equated to sequestration rates of 29.86 Mt CO_2 per year (Ministry for the Environment 2017a). However, there are uncertainties resulting from the difficulties of measuring emissions accurately and assessing forest removals in the LULUCF sectors.

Figure 11: One Billion Trees Programme's Estimated Planting Contributions



Source: Ministry for Forestry (2019)

In December 2018, The NZ Government developed the One Billion Trees Programme with a goal of doubling the current planting rate to reach a planting of one billion trees over a period of ten years to 2028. This is illustrated as Figure 11 above. The Ministry for Primary Industries (2020) calculates the potential carbon sequestration of the programme to be approximately 1.5 million tonnes by 2030 and 6.9 million tonnes by 2050.

4.3. New Zealand Emission Trading Scheme

4.3.1. Carbon Tax vs Emission Trading Scheme

Both a Carbon Tax and an Emission Trading Scheme can be used to set the price on emissions in order to change participants' behaviour towards decarbonisation. While the carbon tax sets the emissions price and lets the market decide about the amount of emissions, an ETS fixes the level of emissions and lets the market decide the emission price (Leining 2017). Carbon taxes were proposed and implemented in some countries such as Sweden and the Netherlands. However, carbon taxes remain unpopular all over the world as (1) big corporations' resist them and are reluctant to increase their costs and use their powerful influence over political processes to defend their interests; (2) imposed carbon taxes could drive most polluting companies to relocate their production processes overseas where regulations are not as strident, leading to carbon leakage and result in no overall global emissions reductions (Newell & Paterson 2010).

In 2002, the New Zealand Labour-led Government proposed a comprehensive carbon tax on energy and industry sectors with a starting price of NZ$15 per tonne (with change over time indexed to international prices up to the ceiling price of NZ$25) to take effect from 2008. This was then abandoned in 2005 due to loss of political support (Leining 2017, Leining & Kerr 2016).

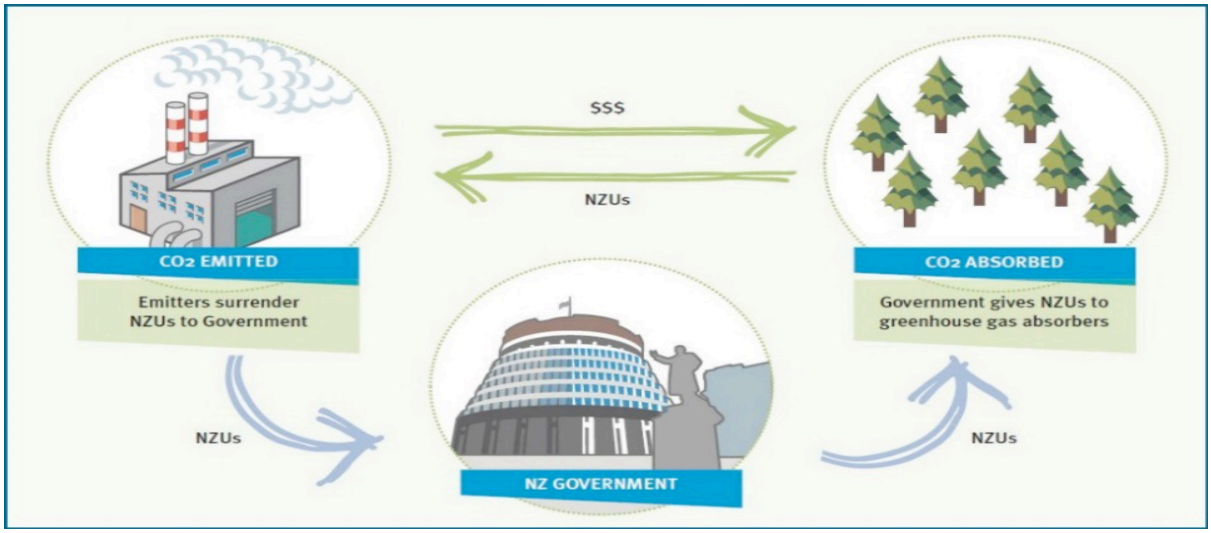
In April 2007, the Labour-led government proposed the ETS system as international interest in emission trading increased along with a growing projected Kyoto deficit. In September 2008,

the initial legislation to implement the NZ ETS was passed (Leining & Kerr 2016). Instead of setting an emissions cap, however, the NZ ETS borrowed the ones offered by the international Kyoto market, ensuring the New Zealand Units (NZU) of carbon credit would match the international price (Leining 2017). It also allowed participants to have unlimited access to the international market to buy and sell Kyoto-accredited units until mid-2015 (Leining *et al.* 2017).

4.3.2. Emissions Trading Scheme

The emission trading scheme represents a quantity and economic wide-based policy instrument for reducing GHG emissions. Any company or sector that emits GHG faces additional costs associated with emission reductions as part of its corporate strategy to mitigate global climate change (Stern & Stern 2007, Leining & Kerr 2016). The emissions price is determined by the marketplace and a regulatory limit on emissions, providing a financial incentive tool for companies to reduce their emissions impact without losing competitiveness. Based on the emissions budget set, the Government makes decisions on unit supply quantity into the ETS which then enables market participants to determine emissions unit prices depending on the supply and demand for those units (Ministry for the Environment 2018a). The number of emission units being traded is equal to the total emissions the participants are entitled to emit (cap) (Leining & Kerr 2016). The tension between unit supply and demand could raise emission prices and therefore, reduce emissions.

Figure 12: How Does the New Zealand Emissions Trading Scheme Work?



Source: Ministry for the Environment (2019)

The NZ ETS was first introduced in 2008 under the Climate Change Response Act of 2002 (Cameron 2011) and is illustrated by Figure 12 above. This was the policy tool designed to help New Zealand reduce its GHG emissions and was a part of the country's efforts to meet its Kyoto Protocol obligations. The NZ ETS was designed to include all sectors and all GHG (all gases) emissions which made it quite comprehensive and ambitious. Corresponding to their obligations, New Zealand's businesses across all emitting industries, except agriculture, must either reduce their emissions themselves or purchase and surrender New Zealand Units (NZUs) or other eligible units from the Government. They may also purchase units from foresters who have earned NZUs by growing trees with the goals of creating economic incentives for businesses to invest in research and development, technologies and for taking other actions to lower emissions (Ministry for the Environment 2018a). Each unit in the NZ ETS equals 1 tonne of CO_2-e emissions.

4.3.3. Sector entry into the New Zealand Emissions Trading Scheme

Table 5 below presents a summary of sector entry into the NZ ETS. Forestry was the first sector responding to the programme, reporting and surrendering ETS obligations since the

beginning of January 2008. The forestry sector is thought to be able to deliver cost-effective net emissions reductions in New Zealand from the reduction of deforestation and increased reforestation and afforestation (Karpas & Kerr 2011). However, there are different obligations relying on whether a forest was established before January 1990 (pre-1990 forests) or after December 1989 (Post-1989 forests), which largely mirrors the rules set out in the Kyoto Protocol.

Table 5: Sector Entry into the NZ ETS

Sector	Voluntary reporting	Mandatory Reporting	Unit Obligations	Inclusions/ Comments
Forestry		1 Jan 2008	1 Jan 2008	Pre-1990 forests
Liquid fossil fuels	1 Jan 2009	1 Jan 2010	1 Jul 2010	Obligation fuel >50,000 litres/ year
Stationary energy		1 Jan 2010	1 Jul 2010	Coal, gas, geothermal, waste, combustion, petroleum, refining involving fossil fuel combustion
Industrial processes		1 Jan 2010	1 Jul 2010	Steel, aluminum, calcination, glass, gold, cable
Synthetic gases	1 Jan 2011	1 Jan 2012	1 Jan 2013	HFCs and PFCs and SF6 imports
Waste	1 Jan 2011	1 Jan 2012	1 Jan 2013	Disposal site operation
Agriculture	1 Jan 2011	1 Jan 2012	Deferred indefinitely	Nitrogenous fertilisers, animal processing, dairy processing, animal farming

Source: Leining & Kerr (2016), Mason, Milne and Ball (2012) and Ministry for the Environment (2019b)

When pre-1990 forest land is deforested, the landowner compulsorily becomes a NZ ETS participant (Carver *et al.* 2017). It is assumed that the surrendered obligation units are supposed to equal the full amount of carbon reduction generated by growing the forest. Owners also have responsibility for any emissions that occur as a result of the deforestation for the purpose of conversion of forested land to non-forest uses. Such non-forest alternatives include crop and animal farming, roads, or housing development (Ministry for the Environment 2017). If they

replant or offset the forest elsewhere when harvesting, the landowners do not face any obligation for any emissions that occur (Ministry for Primary Industries 2016, Ministry for the Environment 2016).

With post-1989 forestry, owners could voluntarily register in the NZ ETS to earn carbon units from 2008 (Kyoto Protocol's first commitment period) when their trees grew to maturity. If their forest was harvested, however, they were obliged to surrender units equal to the carbon dioxide released. This was the only sector in the NZ ETS able to voluntarily join or leave the scheme. As of June 30th 2017, around 47 percent of post-1989 forest had been voluntarily registered in the NZ ETS.

Voluntary joining allowed owners to earn NZUs multiple times for the same year. This was called re-registration arbitrage, meaning that forestry participants first claimed NZUs for the carbon sequestered, after which they could purchase cheaper international carbon units on the Kyoto market and bank any NZUs accrued to meet their liabilities and deregister. They would then repeat the process by registering and claiming their credits (The Treasury 2014). This offered no environmental benefit.

At least four weaknesses in the operation of the NZ ETS can be identified. First, Simmons and Young (2016) noted that from 2011 to 2015, USD$200 million were spent on fraudulent carbon credits, rather than investing that money in emissions reductions in New Zealand. Second, some companies were allocated free units by the Government and were also able to exploit cheap, fraudulent foreign credits instead and stockpile the more valuable New Zealand credits to use or sell later. In other words, they were able to profit from their pollution at the expense of New Zealand taxpayers. Third, the price of carbon units in the New Zealand Trading Scheme fell to virtually zero during this period. This severely damaged the carbon forestry sector because the New Zealand carbon foresters cannot sell credits. As a result, they stop planting and forests are cleared and converted to dairy farms. The massive Wairakei Pastoral estate

managed by State Owned Enterprise Landcorp is but one example of this. Finally, the Government uses these carbon credits to meet New Zealand's Kyoto commitment and therefore, without needing to cut absolute emissions, New Zealand was able to meet its 2020 emissions target. In order to avoid more arbitrage, the Climate Change Response Act was amended in May of 2014 so that only NZUs can be surrendered when deregistering post-1989 forests (Groser & Goodhew 2014).

The stationary energy, industrial processes and liquid fossil fuels sectors entered the scheme with an obligation of reporting and surrendering carbon credits in 2010. The businesses directly affected in the energy sector were generally upstream in the supply chain which meant that fuel companies importing their products had an obligation to report on emissions rather than the customers who drive their private cars in New Zealand (Ministry for the Environment 2019f). Some large fossil fuel users such as airlines and power companies also chose to participate directly in the NZ ETS. However, most costs were passed on to customers when they purchase fossil fuels or electricity (Leining & Kerr 2016). Carver *et al*. (2017) argued that the likely responsiveness of each sector to new price signals is one of the crucial factors which should be taken into account when evaluating the ETS's effectiveness to deliver emissions reduction because it depends on the technical availability and financial potential firms have for reducing emissions. Low marginal abatement cost companies could choose to invest in mitigation as it could reduce their production costs. In contrast, companies with high marginal abatement costs (e.g., energy, fossil fuel companies) would try to pass the emissions costs to their customers rather than investing heavily in mitigation technology. However, if the customers of these companies are sensitive to the product price, it could reduce demand and therefore, reduce the emissions.

The agriculture sector was to be included in the NZ ETS. However, because of the technical and administrative difficulties associated with measuring and verifying emissions, political influence and uncertainty in mitigation opportunities, it has yet to enter the scheme (Ministry

for the Environment 2017, The Treasury 2007 cited in Carver *et al.* 2017). The sector faced reporting obligations on methane from ruminants, nitrous oxide from the soil and the use of nitrogenous fertilisers since the 1st of January 2012. However, there is no legislated date for companies in the agriculture sector to have surrendering obligations under NZ ETS, awaiting the availability of economically viable and practical technologies available to reduce emissions in agriculture and New Zealand's "trading partners have made more progress on tackling their emissions in general" (Ministry for the Environment 2019, p. 1). Their reporting obligation could encourage the sector to prepare in advance for unit obligations, increase transparency and promote emission reduction incentives (Finance and Expenditure Committee 2008).

4.3.4. New Zealand Emissions Trading Scheme Policies and Regulations

The NZ ETS is the primary tool underpinning New Zealand's domestic action to reduce emissions. Table 6 illustrates the stages of NZ ETS Policy Development from 2005 until 2017.

Table 6: Stages of NZ ETS Policy Development

Year	Descriptions
Dec 2005 to Aug 2007	Assessment of mitigation policy options after the decision to abandon the carbon tax
Apr 2007 to Sep 2008	NZ ETS design and initial legislation for phased implementation over 2008 – 2013 Legislation implementing NZ ETS was passed and the first sector (Forestry) entered the scheme retrospectively on 1 January 2008
Nov 2008 to Nov 2009	First NZ ETS review and amendment to moderate its price impact through 2012 and defer the entry of biological emissions from agriculture until 2015 The Government passed legislation modifying NZ ETS. The key changes to the scheme are that: • Agriculture will enter the scheme in 2015 rather than 2013 • Stationary energy and industry will enter the scheme in July 2010 rather than January 2010, allowing extra time to develop the necessary regulations for the sectors' entry • Liquid fossil fuels will enter the scheme in July 2010, six months ahead of the former entry date of January 2011 • The Government will provide emission units for immediate surrender at a capped price of NZ$25 until 2013 • Until 2013 participating sectors (aside from forestry) will need to surrender one unit for every two tonnes of emissions

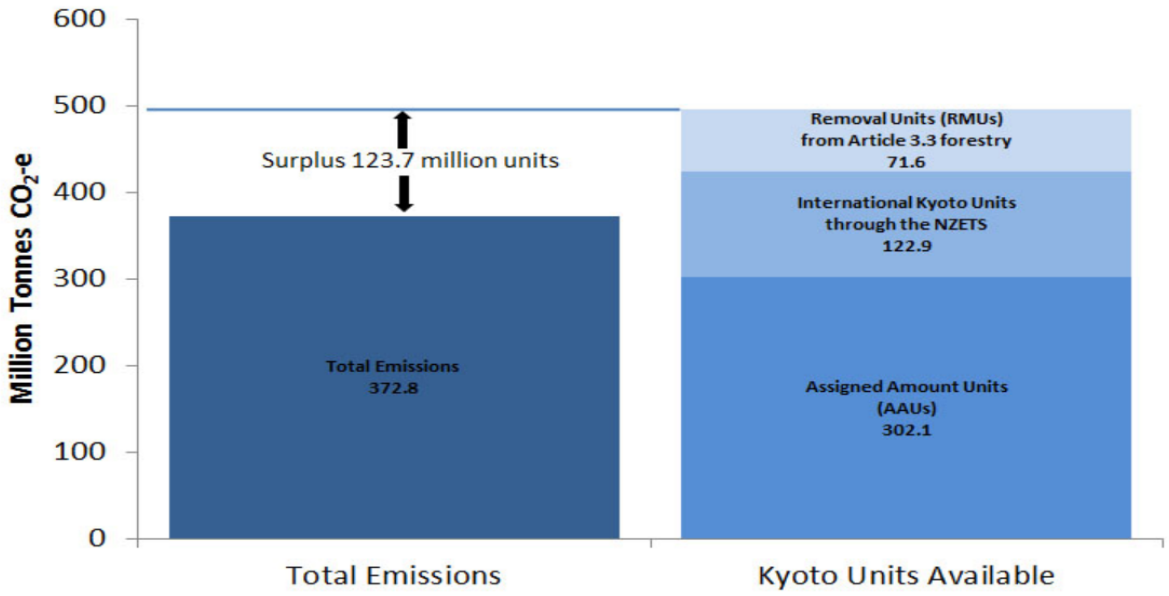
Year	Descriptions
	• Free allocation will be given to the most emission-intensive, trade-exposed industry (including agriculture) on an intensity basis, and will be phased out at a slower rate (Industry that is not emission-intensive and trade-exposed will not receive free allocation).
Dec 2010 to Nov 2012	Second NZ ETS review and amendment to both extend moderated price settings and defer biological emissions from agriculture indefinitely Legislated amendments to NZ ETS (Contained in the Climate Change Response Act 2002) • Extend transitional measures to reduce the cost impacts of the scheme beyond 2012 – this has seen the introduction of two-for-one surrender obligations and the choice for participants to meet their obligations by paying the Government NZ$25 per tonne of emission (the fixed price option) • Remove the start date for surrender obligations for biological emissions from agriculture – the Government has indicated that the agriculture sector will only face surrender obligations if there are economically viable and practical technologies available to reduce emissions and when New Zealand's trading partners make more progress on tackling their emissions in general • Introduce "offsetting" as an option for pre-1990 forests – this provides forest landowners with the flexibility to convert their land to better use, while avoiding deforestation costs by planting a carbon-equivalent area of forest elsewhere
Sep 2011 to May 2015	Adjustment of international linkages, ending with full delinking from the international Kyoto market The Government stopped accepting Kyoto Protocol emissions units in the NZ ETS, which now operates as a domestic-only emissions trading system.
Nov 2015 to May 2016	Third NZ ETS review, Phasing out over three years the transitional measure that required the surrender of only one emissions unit for every two tonnes of emissions. So a full obligation will apply from January 2019 An international carbon markets project was established to identify international carbon trading options, with a view to enabling New Zealand to source international emissions reductions in the 2020s.
June 2017	A series of in-principle decisions on unit supply, price management, and linking were announced • By 2021, introducing auctioning of emission units under the overall limit • Implementing an alternative price ceiling to replace the current fixed-price of NZ$25 per tonne • Placing a quantity limit on the use of international units purchased by NZ ETS participants • Coordinating future decisions on unit supply, price ceiling, linking, fixing settings five years in advance and updating them on a rolling basis

Source: Leining (2017), Leining & Kerr (2016), Ministry for the Environment (2018)

4.3.5. Use of international carbon units

The Kyoto Protocol was the international legally binding agreement to reduce global greenhouse gas emissions and provided a framework for international emissions trading. Under the Protocol, New Zealand committed to limit emissions to 1990 levels (61.0 Mt CO_2-e) on average over the first commitment period from 2008 to 2012 (meaning that total emissions could be up to 309.6 Mt CO_2-e over five years) or to take responsibility for any emissions over this level by retiring their Kyoto units domestically. If New Zealand does not have enough Kyoto units domestically, it has to purchase eligible units internationally to make up the shortfall. Over 2008 to 2012, the total New Zealand emissions were 372.8 Mt CO_2-e. Figure 13 is a graphic representation of the New Zealand's total gross emissions alongside the Kyoto Units available.

Figure 13: Total (Gross) Emissions Over 2008 – 2012 and the Balance of Kyoto Units to Account for These Emissions



Source: Ministry for the Environment (2019)

New Zealand issued 302.1 million assigned amount units (AAUs) at the start of the first commitment period, representing the target to limit emissions to 1990 levels. NZ ETS participants surrendered 122.9 million Kyoto units to the Government through the NZ ETS,

with 71.6 million units from domestic forestry net removals. Therefore, at the end of the first commitment period, New Zealand had a surplus of 123.7 million units.

Since the 31st of May 2015, the Government stopped accepting Kyoto Protocol emissions units in the NZ ETS and now only allows trading domestic carbon units (Ministry for the Environment, 2019). Before that, New Zealand companies were allowed to use international units to meet their obligations under the NZ ETS with no quantitative limit because from 2009 until 2012, New Zealand was linked to the Kyoto market. The New Zealand Unit (NZU) prices were roughly equal to Kyoto prices. However, in November 2012, the New Zealand Government decided not to proceed with the second commitment period of the Kyoto Protocol (Ormsby & Kerr 2016). The NZUs were then traded at a higher price as compared to Kyoto's reference price reflecting the future scarcity for NZUs as the participants were no longer allowed to purchase and reserve their cheap Kyoto units to meet their future obligation for surrender.

Purchasing international carbon units can help New Zealand make a more ambitious and cost-effective contribution towards global emissions mitigation. However, in order to ensure the effective progress on New Zealand's decarbonisation pathway, the Government needs to make sure these international emissions units will have environmental integrity, are not doubled counted under the seller's Nationally Determined Contribution (NDC) and have government approval by seller and New Zealand (Leining *et al.* 2018). International units could meet four-fifths of the intended nationally determined contributions (INDC) emissions reduction target, based on the cost-effective modelling commissioned by the Ministry for the Environment (Informetrics 2015 cited in the Royal Society of New Zealand 2016).

The NZ ETS has its own units of New Zealand Units (NZUs) but could be linked to other systems. This linkage means that businesses with the obligation to surrender their carbon units

were allowed to submit those Kyoto Units (Ormsby & Kerr 2016). Some of the Kyoto Units are as follows:

- The basic unit of account which was established by the Kyoto Protocol called Assigned Amount Units (AAUs). Each AAU is equal to one tonne of carbon dioxide equivalent. Each country has a certain amount of AAUs depending on its target under Kyoto. They aim to keep their emissions for the period of 2008 to 2012 within that number of AAUs which can include those credits they have gained through investments in Clean Development Mechanism (CDM) and Joint Implementation (JI). If they cannot achieve the targets, they could buy AAUs from other countries that have over-complied with their targets (Newell & Paterson 2010).
- Certified Emissions Reductions (CERs): units issued for the projects in developing countries with an aim to reduce emissions below business-as-usual and contribute to sustainable development
- Emission Reduction Units (ERUs): units issued for emission-reduction projects in industrialised countries and which require cancellation of an equivalent number of Assigned Amount Units (AAUs) by the host country
- Removal Units (RMUs): awarded to industrialised countries for net removals in the forestry sector.

Since 2015, New Zealand restricts the exchange of AAUs which are directly convertible on a 1-to-1 basis to New Zealand Unit (NZUs) and specifies that no "imported AAUs" can be surrendered to meet ETS obligations by a participant. This is because (i) the European Union's ETS does not allow AAUs to be surrendered, so in order to make a compatible linkage between the New Zealand ETS and the European system, AAUs cannot be surrendered to meet the obligation; (ii) some countries' AAUs do not have environmental integrity due to hot air (Karpas & Kerr 2011).

Newell and Paterson (2010, pp. 136) defined "hot air" as “the surplus emissions entitlements available to countries that underwent large-scale de-industrialisation after the baseline year for their agreed targets”. Soviet bloc countries like Russia and Ukraine have a large volume of excess Assigned Amount Units (AAUs) in the ETS system and can thus sell their AAUs cheaply. As a consequence, overall worldwide emissions will not be reduced if these are counted.

In addition to the hot air problem, environmental integrity was not ensured as auditors and national authorities were not performing their duties properly and had few incentives to do so (Woerdman 2015). Moreover, New Zealand's participants relied much on the international emissions unit, which accounted for nearly 96 percent of the total surrendered units from Russian and Ukraine (Environmental Protection Authority 2014). In particular, 74 percent came from Emission Reduction Units (ERU) under Kyoto Protocol Joint Implementation (JI) projects and 21.7 percent came from Certified Emissions Reductions (CERs) (The Royal Society of New Zealand 2016). These New Zealand participants simply banked the questionable international emissions credits on the assumption they would become more valuable in the future. NZ carbon price units steadily collapsed from over NZ$20 per tonne in 2011 to less than 15 cents per tonne in 2013 (this will be discussed further in the Sub-section 4.3.7-Price of NZ carbon unit). Many landowners deforested their land and converted it for dairy farming, thus creating no environmental benefit.

4.3.6. Phase-down of industrial free allocation

Industrial allocation is the free distribution of New Zealand Emission Units (NZUs) to businesses in order to mitigate the risk of emission leakage. Emission leakage is an environmental integrity issue, meaning that business activities are not allowed to compete with a similar activity offshore where similar costs from carbon pricing or climate policies do not

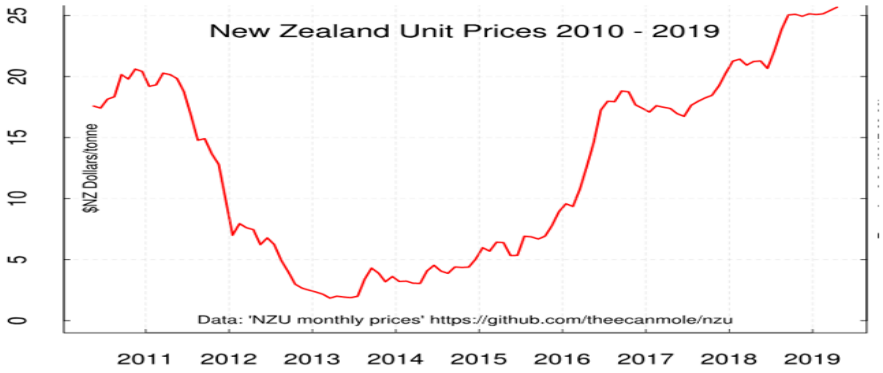
occur. Therefore, businesses tend to export their emissions rather than reduce them, with potentially significant economic and social impacts such as a loss of market share or closing down factories which could increase the unemployment rate (Ministry for the Environment 2018).

Companies participating in emissions-intensive trade-exposed industries (for instance, steel, aluminium, pulp and paper) may be eligible for free emissions units from the Government based on their past performance in order to protect their international competitiveness as compared to companies in other countries that do not face a carbon tax and/or surrendering unit costs (Leining *et al.* 2017). However, industrial free allocation lowers the mitigation incentives for recipients and is not aligned with New Zealand's decarbonisation targets.

In November 2008, the National-led Government came to power. They undertook the first NZ ETS review in 2009 and made amendments to moderate its price impact by introducing a one-for-two obligation in non-forestry sectors and set a ceiling price of NZ$25 per tonne through December 2012. From November 2015 to May 2016, the New Zealand Government decided to phase out the transitional measure that required the surrender of only one emissions unit for every two tonnes of emissions. This was phased out over three years which means that the full obligation for non-forestry sectors has applied only from January 2019 (Leining 2017, Leining & Kerr 2016). The phased removal of the one-for-two obligation has allowed the scheme to more effectively support New Zealand's climate change goals and help New Zealand transition to a decarbonised economy without tackling a prolonged barrier on the NZU price signal (Ministry for the Environment 2019, Bailey & Jackson 2016).

4.3.7. New Zealand Emissions Unit Price

Figure 14: Emission Price in NZ ETS



Source: CommTrade Carbon (2019)

As is readily apparent from Figure 14 above, the carbon unit price under the NZ ETS has fluctuated more significantly, and was greater than might be expected. From 2008 through mid-2015, participants in the NZ ETS could meet their obligation for surrender by purchasing unlimited international units. A global oversupply and shortcomings in the international rules meant that international Kyoto units were available at very low prices down to NZ$0.20 per tonne in 2013/14 (Leining 2016, Leining & Kerr 2016, Leining *et al.* 2017). As a consequence of New Zealand's decision to make its 2013 to 2020 commitment under the UNFCCC rather than Kyoto Protocol, the NZ ETS was delinked from the international Kyoto Market and so international units have not been accepted for NZ ETS compliance since mid-2015.

Owing to NZU scarcity and without being able to surrender cheap international credits, the NZU price recovered and kept increasing, reaching NZ$24.85 in September 2019 (CommTrade Carbon 2019). However, even the current price is considered too low to significantly influence behaviour to reduce emissions. For example, the NZ ETS component of the price of diesel is around 1.13 cents per litre (out of the average diesel price in 2016, which was about NZ$1.20 to NZ$1.30 per litre) and of petrol 0.98 cents (out of the average petrol price in 2016 of about NZ$1.90 to NZ$2.00 per litre) (MBIE 2016 cited in Leining *et al.* 2017). Using the IPCC's

models to drive sufficient global action to limit the average global temperature increase to 2°C, the Ministry for the Environment (2015) stated that global carbon prices need to be in the NZ$60 to NZ$200 per tonne range by 2030. With a low carbon price, the companies and their consumers are likely to prefer paying an emissions price rather than seeking to reduce their emissions (Numan-Parsons *et al*. 2011).

In the third review of the ETS released in 2015, the then-current projected policy measures will have little impact on future GHG emissions if the settings remain the same (Ministry for the Environment 2017). Although a carbon price is a crucial element of climate policies to enable effective cost emissions reduction, it is not sufficient (Hood 2013) because (1) there are non-price barriers such as a lack of information, principal-agent relationships, split-incentive situations and lack of access to capital that make mitigation actions costly; (2) implementation of technologies such as advanced biofuels, carbon dioxide capture and storage and so on remain expensive and uncertain in their ability to reduce emissions enough to yield an economic advantage, even if the carbon price is high (Leining *et al.* 2018). A "silver bullet" policy solution is unrealistic. The ETS must be accompanied by other policies in order to provide multiple co-benefits. For example, if public transport is encouraged, it is likely to address the objectives in public health, air quality, congestion, and climate change.

To date, the quantity of domestic unit issuance has no cap. The components of the NZ domestic unit supply sources include fixed free allocation to the forestry and seafood industries; output-based free allocation to emissions-intensive, trade-exposed industrial companies and issuance of units for forestry and industrial removals (Royal Society of New Zealand 2016). The NZ ETS supply units represent a number of units (and therefore emissions) that should be limited and are in line with the NZ's emissions reduction targets and the associated emissions budget. Therefore, the decisions on the NZ ETS unit supply are of great importance in order to provide transparent and predictable regulation (Ministry for the Environment 2018). Government has

pointed out that without any meaningful cap, there is not a sufficient price signal. This creates uncertainty for investors and businesses when planning for future increases of the carbon price. “New Zealand climate change policy has been dialsceed back waiting for the rest of the world to move” (The Parliamentary Commissioner for the Environment 2018, p. 10).

4.4. New Zealand’s Emissions Reduction Targets

Under the Paris Agreement, Article 4.3, there are no agreed guidelines on what would constitute a fair level of contribution to the global efforts, beyond the Government’s general understanding of it to reflect the “highest possible ambition” and “common but differentiated responsibilities and respective capabilities, in the light of different national circumstances” (UNFCC, 2015, p.2). It means governments are allowed to provide some justification of their “fair share” proposed commitments. Fair share only determines the minimal emissions reduction level that would be required to make sure the global emissions reduction target is met without relying on other countries making a comparably bigger effort to reduce emissions (Climate Action Tracker, 2020).

Setting a useful target based on a national carbon budget is of great importance in providing clear and transparent policies that need to be in line with international climate negotiations. A carbon budget is essential to planning for serious emission reductions, which in addition must be legally binding (Ministry for the Environment 2019g). New Zealand has had a number of emissions reduction targets over the years from 2008 to 2050, which are summarised in Table 7 below. However, none of those domestic targets is legally binding. This means that there is no requirement written in the law defining who bears the responsibility for climate change and what actions should be taken to meet agreed targets (Sustainability Council of New Zealand 2019). The Minister for the Environment can make amendments to the targets at any time for

any reason without the scrutiny of the Parliament (Parliamentary Commissioner for the Environment 2018).

Table 7: New Zealand's Greenhouse Gas Emissions Reduction Targets

Period	Nation Carbon Reduction Targets
2008-2012	**Kyoto Protocol:** Reduce average annual emissions over the period to 1990 level
2013-2020	**United Nations Framework Convention on Climate Change (UNFCCC):** Unconditional: Reduce 2020 emissions to 5% below 1990 level Conditional: Reduce 2020 emissions to 10-20% below 1990 level
2021-2030	**Paris Agreement:** Reduce 2030 emissions to 30% below 2005 level (11% below 1990 level)
1990-2050	**Domestic Policy:** Reduce 2050 emission to 50% below 1990 level

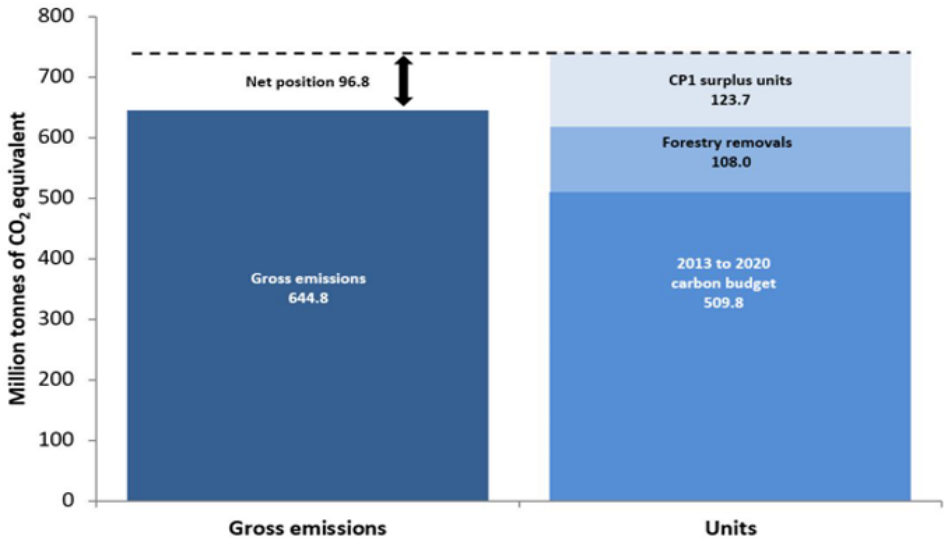
Source: Ministry for the Environment (2019)

A target under the Kyoto Protocol's first commitment period was reducing greenhouse gas emissions to 1990 levels between 2008 and 2012. This means that total emissions could be up to 309.6 Mt CO_2-e over five years. The actual NZ gross emissions are of 372.8 Mt CO_2-e, meaning New Zealand needs to purchase carbon credits in order to make up the shortfall. UNFCCC's True-up Report documented that New Zealand not only meet this target in 2016, but also achieved a surplus of 123.7 million units over this commitment period (Ministry for the Environment 2019). This surplus is as a result of New Zealand issuing 302.1 million assigned amount units (AAUs) at the start of the first commitment period, representing the target necessary to limit emissions to 1990 levels with 122.9 million Kyoto units allotted to the Government through the NZ ETS and an additional 71.6 million units from domestic forestry net removals.

For the next period, from 2013 to 2020, New Zealand elected not to commit to a climate change target under the Kyoto Protocol's second commitment period. Instead, New Zealand chose to

take the United Nations Framework Convention on Climate Change (UNFCC) 2020 target in which New Zealand set an unconditional target of reaching five percent below its 1990 level by 2020 while remaining party to the Kyoto Protocol. The Ministry for the Environment (2019) calculates that New Zealand is on track to meet the 2020 target, with a surplus of 96.8 units. The emissions projection for 2020 is 644.8 million units higher than the carbon budget of 509.8 million units, as it is likely to be offset by forestry removals of 108 million units and a surplus of 123.7 million units carried forward from the first commitment period of the Kyoto Protocol. Projected gross emissions for the 2013 to 2020 period are graphically presented in Figure 15 below.

Figure 15: New Zealand's Projected Gross Emissions and Units Held During the 2013 to 2020 Period (as at 12 April 2019).



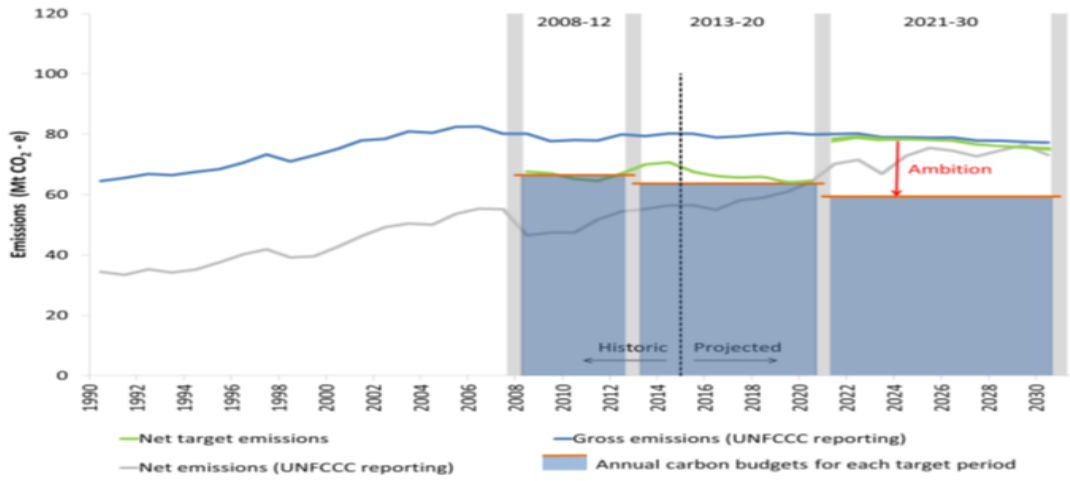
Source: Ministry for the Environment (2019)

New Zealand's Nationally Determined Contribution (NDC) under the Paris Agreement set a target of reducing 2030 emissions to 30 percent below the 2005 level (or 11 percent below the 1990 level). This target seems to be less ambitious; in order to meet the Paris Agreement goal, countries like New Zealand only committed to setting their own targets. These are more domestically-based, set to ensure economic viability. The domestic targets set by New Zealand

have no reason to be in line with the Paris Agreement, however. The Climate Action Tracker (2019) argues this commitment is insufficient, as it is not within their fair share range and not consistent with the Paris Agreement. It notes that if all government targets were in this range, the average global warming would be between 2˚C and 3˚C.

In measuring progress towards targets, a multi-year carbon budget approach has been applied. Progress towards targets is not measured by looking at emissions in a single year but includes a comparison of emissions in all years of each target period such as 2008 to 2012; 2013 to 2020; and 2021 to 2030, as illustrated in Figure 16 below.

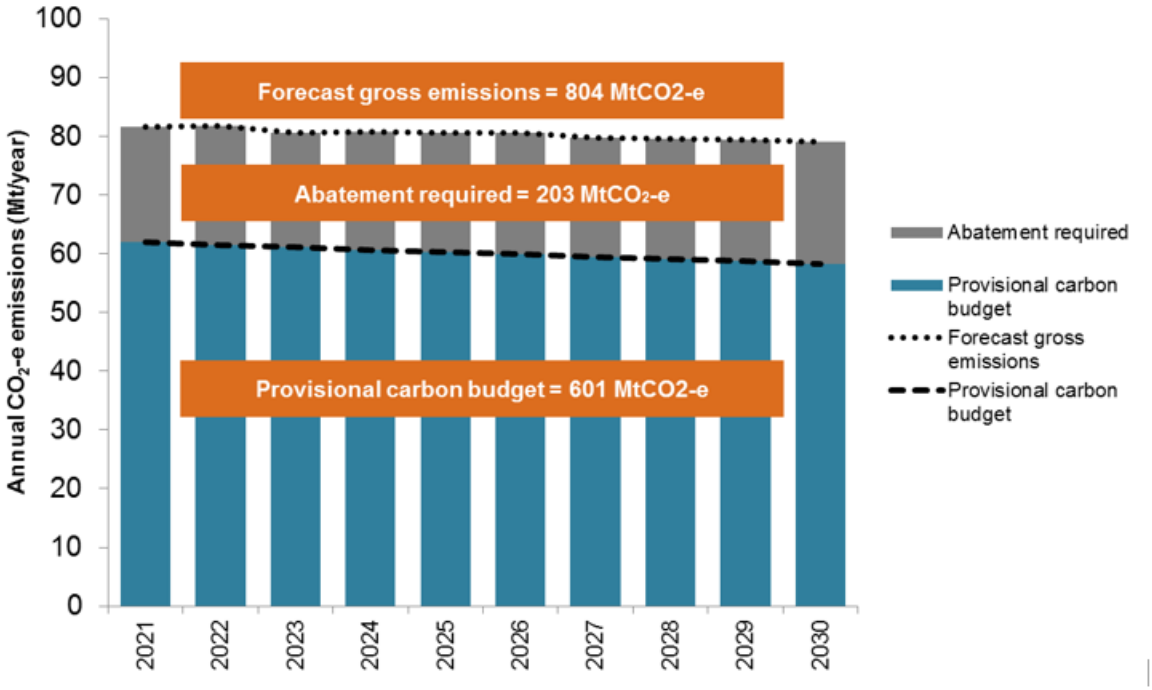
Figure 16: A Comparison of Emissions in All Years of Each Target Period



Source: Ministry for the Environment (2019d)

This means that the estimated provisional carbon budget for the period of 2021 to 2030 is about 601 Mt CO_2-e. With the current policies, however, New Zealand's projected emissions will be 804 Mt CO_2-e (Ministry for the Environment 2019d). The relationship between gross emissions, provisional carbon budget and the abatement required to meet the 2030 target in New Zealand is presented in Figure 17.

Figure 17: New Zealand's 2030 Target and Provisional Carbon Budget for 2021-2030.



Source: Ministry for the Environment (2019)

In order to meet the target, New Zealand could either offset the total by emissions removals from forests in New Zealand or/and purchase international carbon units. As noted in the previous section, net removals from forestry will be lower over the 2020s due to the greater number of trees reaching harvest maturity. Therefore, meeting the Paris Agreement target is a significant challenge for New Zealand. In the case where the NZ Government fails to deliver enough emission reductions to meet the target, the deficit between New Zealand's 2030 INDC and its carbon budget in 2030 must be made up mainly through international emissions trading. This will be important for preserving New Zealand's options for linking to international carbon markets, but the government also needs to consider limiting participants' use of international units before the NZ ETS re-opens to international units (Treasury 2014). Alternatively, the government would have to fund domestic emission reduction itself, with costs borne by taxpayers rather than emitters.

The Paris Agreement, Article 4.1 (UNFCC 2015, p.4) noted that

> ... to achieve the global temperature increase below 2 degrees centigrade above pre-industrial level [target], all countries agreed to aim to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century.

New Zealand's 2030 target is not considered to be a long-term target as it is only about 10 years distant from today, while in the Paris Agreement, the second half of this century means dates later than 2050. In the United Kingdom Climate Change Act (2008), the UK set its 2050 target. It commits to reducing greenhouse gas emissions by at least 80 percent of 1990 levels by 2050, which is thirty years away and could be better justified if scientific analysis supports it (Parliamentary Commissioner for the Environment 2018).

The 2050 target is to reduce 50% of national net greenhouse gas emissions from 1990 levels in order to keep average global temperature rise below 2°C. The IPCC's Fourth Assessment Report (2014), estimates a reduction in global CO_2 emissions of 50 percent to 85 percent by 2050 is required to keep the global average temperature increase of 2.0°C to 2.4°C above pre-industrial levels. This means that New Zealand's 50 percent reduction target represents the lower end of what is considered as globally necessary to meet the global target (Royal Society of New Zealand 2016).

The 2050 target for New Zealand should meet net-zero carbon by 2050 for long-lived greenhouse gas emissions (Zero Carbon Act 2019). Mayer & Merry (2015) argue that New Zealand must commit to 2050 reduction targets by reaching ambitious reductions of 90 percent emissions below the 1990 level. In addition, in order to prevent more than a 2°C global average temperature increase, annual emissions must decrease by about 50 percent between now and 2030 and reach net zero by 2050. It means that we need to reduce our emissions continuously at about three percent each year on average (Stern 2018).

New Zealand's Zero Carbon Act has been in force since the 13th of November 2019. The Act is expected to drive meaningful climate change action in New Zealand. It is consistent with limits to the average global warming increase to below 1.5°C over the next 30 years. The Act provides a framework by which New Zealand can develop and implement clear and stable climate change policies that contribute to the global effort under the Paris Agreement (NZ Parliament 2019). The Zero Carbon Act set new GHG emissions reduction targets as follows:

- Reducing all GHG (except methane) to net-zero by 2050
- Reducing emissions of methane to within the range of 24 percent to 47 percent below 2017 levels by 2050 including to ten percent below 2017 levels by 2030. (Ministry for the Environment 2019g)

The Zero Carbon Act also established emissions budgets for every five year period to specify the volume of emissions New Zealand will be entitled to emit in each and guidance for meeting the 2050 target. This ensures the transitions are fair and gives businesses and households more predictability.

Although the Act sends some positive signals in addressing climate change, there is no remedy for failure to meet the 2050 target. In other words, there is no legal compulsion to comply. Furthermore, as a result of successful lobbying by the agricultural sector, methane is treated differently to other GHG emissions under the Act which generated skepticism of the Act's effectiveness for meeting the Paris Agreement target (Greenpeace 2019).

4.5. Normative Pressures From the Perspective of New Zealand's Organisations

New Zealand's Emissions Trading Scheme is the country's primary policy response to the domestic climate change effort. This policy instrument has long been praised for its efficiency and cost-effectiveness but also raises questions about its environmental effectiveness and moral values with regard to emissions trading. Given the increasing trends in greenhouse gas emissions, it is possible that heightened public perceptions of New Zealand climate change policies' persistent effectiveness problems could erode its institutional legitimacy. New Zealand's emissions reduction targets are clearly insufficient to limit temperature rise to less than 2°C (Climate Change Tracker 2020).

Business is a powerful force in environmental politics nationally and globally in terms of the provision of economic resources, though individual businesses face a variety of constraints to their influence. However, achieving political influence will require the establishment of a business coalition, such that effective collective action can be undertaken.

Meckling (2011) critically explored the role of the business community in the rise of GHG emissions trading as the primary policy response to climate change, and the avoidance of carbon taxes. The author distinguishes two types of business coalitions: (1) anti-regulatory coalitions which aim to prevent environmental regulation in the first place by opposing regulatory initiatives and (2) pro-regulatory coalitions which try to mix and match their political alliances with various environmental and business interests groups to create flexible advocacy coalitions. Given the aims of the New Zealand Climate Leaders Coalition to aggregate climate change response interests across New Zealand's businesses, the coalition appears to be pro-regulatory.

The Climate Leaders Coalition was launched in July 2018 to promote business leadership and collective action on the issue of climate change (Climate Leaders Coalition 2020). Thirteen of New Zealand's largest companies are the Coalition's founding signatories and these include some of the biggest corporate emitters such as Air New Zealand, Fonterra, Z Energy and the Warehouse. As at November 2019, 107 organisations have joined the Coalition which accounts for more than 60 percent of the country's gross emissions and represents nearly one third of private sector GDP. Some large companies have not joined the coalition, however, including Genesis Energy, Mainfreight and Infratil which might indicate that they are not ready to meet the commitment to sign an action pledge.

By being a signatory to the Coalition, the organisation is actively: (1) measuring its New Zealand's greenhouse gas footprint, having the data independently verified by a third party and making the information publicly available; (2) adopting targets grounded in science that will deliver substantial emissions reductions so the organisation's members contribute to New Zealand being carbon neutral by 2050; (3) assessing climate change risks and publicly disclosing them; (4) proactively supporting their members to reduce their emissions; and (5) proactively supporting their suppliers to reduce their emissions (Climate Leaders Coalition 2020).

In terms of action, 90 percent of members are measuring their emissions, 71 percent have publicly reported their emissions, 60 percent are working with their suppliers to reduce emissions and 55 percent have set emissions reduction targets which are consistent with the Paris Accord to keep the increase in global average temperature to less than 2°C (Oram 2019). Nevertheless, it does not mean these companies have made progress on actual emissions reduction. Additionally, energy efficiency is the prime focus for members as a way of achieving emission reductions. This appears to require less investment from the business than making changes in technologies, business models, strategies, cultures, products and services.

Meckling (2011) argues that the aggregation of interests occur across industrial sectors can generate discursive power in the form of legitimacy, i.e., the broader the support for an idea, the more legitimacy it has in the eyes of policy-makers. They not only signal extensive support to policy makers but also offer a policy idea that has been pre-negotiated between interest groups. The New Zealand Climate Leaders Coalition provides support for the current climate policy, primarily focusing on the emissions trading scheme which is considered to prevent more costly policy alternatives such as carbon taxes.

The coalition, on the other hand, might make a serious effort to develop innovative approaches to government's climate change response in order to help fill governance/regulatory gaps. This can only be done by taking effective collective action by creating strong linkages among members through increasing the level of coordination and collaboration, supporting weaker organisations and encouraging the entry of new members (Abbott 2014). New Zealand's organisations need a more proactive approach in committing to climate change action, for competitive as well as environmental reasons.

Apart from signing up to the climate change coalition, New Zealand organisations can also take other climate-relevant actions by adopting emissions accounting and disclosure practices which are all voluntary. Notably, many New Zealand organisations are committed to the Certified Emissions Management and Reduction Scheme (CEMARS) (now known as Toitu carbonreduce certification), carboNZero (now known as carbonzero), and Enviro-Mark programme which are run by Enviro-Mark Solutions Limited (now known as Toitu Envirocare), a wholly-owned subsidy of Landcare Research, a Crown Research Institute which has a strong international reputation. A selection of these are presented in Table 8 below.

Table 8: Summary of Some Carbon Reduction and Neutrality Certification Schemes in NZ

Certification	Descriptions
Carbonreduce (previously known as Certified Emissions Management and Reduction Scheme-CEMARS)	Carbon measurement and reduction claims
Carbonzero (previously known as carboNZero)	Carbon neutrality claims
Enviro-Mark	Environmental certification programme It is a five-step environmental management system, with a focus on continuous improvement, as companies work from 'Bronze' upwards to a 'Diamond' level of certification. Enviro-Mark Diamond (the final step) is equivalent to the ISO 14001 International Standard.

Source: Ministry for the Environment (2017)

Through these carbon programmes and certifications, Toitu helps companies to measure, manage and mitigate their carbon emissions. On average, their clients achieve an over 20 percent reduction in emissions in a three to five-year period (Toitu Envirocare 2020). In terms of carbon programmes members and as at September 2020, 136 organisations are Toitu carbonreduce certified organisations (previously known as CEMARS) and 91 companies are Toitu carbonzero certified organisations (previously known as carboNZero). The Carbonzero programme allows companies to measure the amount of carbon they release and offset that with a reduction in emissions or the removal of carbon. This can include offsetting remaining emissions through carbon credits to achieve a net zero balance. Organisations will be certified in accordance with the ISO 14064-1 standard, which specifies principles and requirements for quantification and reporting GHG emissions and removals or by PAS 2050, which is also a publicly available specification that enables businesses to measure the environmental impact of their organisation's activities, products, and services and measure their lifecycle GHG emissions.

4.6. Conclusion

This chapter first discussed NZ's GHG emissions unique profile, the New Zealand Emission Trading Scheme and National Emissions Reductions Target. An overview of NZ's GHG emissions profile and historical and projected GHG emissions to 2030 showed that net national emissions are expected to rise significantly over 100 percent by 2030 as compared to 1990. Next, a presentation of New Zealand Emissions Trading Scheme provided an overview of how NZ ETS works in general. This included a discussion of ETS policies and regulations, and explained why the selection of an emissions trading scheme is preferable to a carbon tax. Also discussed was the use of international carbon units to meet emissions reduction targets, the phase-down of industrial free allocation from January 2019 and carbon unit pricing under the NZ Emissions Trading Scheme. New Zealand's commitments during the period from 2008 to 2050 was discussed, with a focus on the national carbon reduction target from the Kyoto Protocol. Finally, a discussion of the United Nations Framework Convention on Climate Change, the Paris Agreement and Domestic Policy was also provided, along with voluntary business-based initiatives like the Climate Leaders Coalition, and programmes like carbon measurement, reduction and offset certification, both of which might generate normative pressure to reduce GHG emissions.

CHAPTER 5 – RESEARCH METHOD

5.1. Introduction

The first section of this chapter discusses the research paradigm whilst reflecting on my understanding about my research in corporate emissions target setting and reporting. I justify my research approach of utilising a mixed-method design and its subsequent application to a sample of NZX listed companies. The remainder of the chapter details the three stages of data collection, including content analysis, discourse analysis and fieldwork study.

5.2. Research Paradigm

Easterby-Smith *et al.* (2008) note that awareness of philosophical assumptions helps to understand different perspectives related to research arguments and more importantly, how different philosophical positions impact the selection of research practices. Kuhn (1962) defined a research paradigm as a set of common beliefs that are shared amongst researchers about what should be studied, how research should be conducted and how results should be interpreted. Research paradigms can be characterised as a set of assumptions related to ontological, epistemological and methodological positions (Guba 1990).

Ontology is a philosophy of reality which researchers investigate. Epistemology explores how researchers view reality, i.e., investigating the relationship between reality and the researchers (Krauss 2005, Easterby-Smith *et al.* 2008, Bryman & Bell 2015). Therefore, researchers' ontological viewpoints shape their epistemological beliefs in terms of how knowing and understanding reality can be developed (Bisman 2010). Methodology identifies the methods and criterion of adequacy for attaining justifiable knowledge about reality, i.e., the techniques used by the researcher to investigate the reality and what justifies those techniques (Krauss 2005, Easterby-Smith *et al*. 2008, Bryman & Bell 2015).

My perspective is one of scepticism. Hence, a pragmatic research philosophy is the best match with my scholarly view and that I apply to the study of corporate GHG emissions reduction targeting. This is different from both positivism, which is concerned with a solid reality and constructivism, which accepts numerous realities. Pragmatism embraces an approach based on collective perceptions about a single, independent reality (Healy & Perry 2000), as I have done in this research. Epistemological relativism means that researchers may embrace both the objective and subjective in orientations toward knowledge over the course of studying a research question. At some points, a researcher may become more subjective via interactions with the study's objects. Alternatively, a researcher could become more objective and comfortably stand apart from what he/she is studying (Tashakkori & Teddlie 1998).

Pragmatism presumes that reality occurs but the existence of reality cannot be absolutely explained (Guba 1990). Arguably, there are differences between reality and people's world-views of it. From an ontological perspective, the pragmatist's perception of reality comprises two components: (1) an external world that is independent of our minds; (2) the realisation that truth cannot be determined once and for all. Pragmatists cannot establish whether one explanation of reality is better than another. Pragmatists think that there may be casual relationships among constructs of social phenomena but that these will never be completely pinned down (Tashakkori & Teddlie 1998). Cherryholmes (1992) points out that there are multiple possible explanations of the results from a research study, and that results' interpretations are a reflection of a researcher's value.

In my study, corporate GHG emissions reduction targets are a reality that exists and affects a corporation's environmental performance. Such reality can be viewed as external to the world of researchers, managers and employees, so hypotheses can be statistically tested to produce generalisable findings. In contrast, emissions reduction targets could also be seen as a subjective, socially and politically constructed reality. The assumption of setting environmental

targets is that targets can help contribute to enhanced corporate environmental performance, but this does not always hold true. Environmental targets can be used as tools for companies to actually mask a corporation's unsustainable environmental performance. Therefore, it is also of great importance to investigate the corporate motivations in setting their environmental targets as is one thrust of this thesis.

Pragmatism appears to be the best paradigm for justifying the use of a mixed-method. Healy and Perry (2000) suggested that both qualitative and quantitative methods are appropriate for investigating the underlying systems that drive actions and events. The mixed-method approach is guided by the research questions, which ultimately reflects the value of both subjective and objective knowledge (Tashakkori & Teddlie 2003). The pragmatic paradigm often offers more vigorous and interesting results and thus is of greater value to research focussed on corporations, stakeholders and policy-makers even though it does not represent the only choice of philosophical foundation used in a mixed-method research (Biesta 2010, Greene & Hall 2010).

5.2.1. Mixed Method Design

Prior research studies on corporations' GHG emissions target setting have been typically conducted as quantitative studies. Such research consists of a hypothesis testing exercise, application of inferential statistics to derive explanations based on limited sets of factors (e.g., difficulty/ambitiousness, industry, target timeframe) and influencing target setting on environmental performance (for example, see Ioannou *et al.* 2016, Dahlmann *et al.* 2015). In contrast, a qualitative approach can be more directed towards investigating the rationales of climate change target setting and disclosure and actual meaning-making of the corporate climate change target setting and reporting processes. As being best fit with the pragmatism paradigm, mixed methods are chosen to answer the research questions proposed for this thesis

(Johnson & Onwuegbuzie 2004). In the context of my project, a mixed-method design greatly facilitates knowledge creation around corporate environmental target setting and deepens results for additional contextual analysis.

Johnson and Onwuegbuzie (2004 p. 123) highlight that in "mixed methods research, a researcher combines elements of qualitative and quantitative approaches for the broad purpose of breadth and depth of understanding and corroboration". A mixed-method approach can provide quantitative results as well as in-depth knowledge that is applicable in a specific context, that enhances an understanding of the relationships and processes discovered by the research. It is essential that both quantitative and qualitative components are reciprocally illuminated and integrated to ensure that "the end product is more than the sum of the individual qualitative and quantitative parts" (Bryman 2007, p.68). This reciprocity in methods is especially important for the present study.

Thus, the research design procedure which was selected in my study was quantitative → qualitative which means that quantitative data were collected prior to qualitative data. It also indicates a higher priority for the qualitative approach and a lower priority for the quantitative method (Morse 2003).

There are different rationales for conducting mixed-method research. Harrison and Reilly (2011) drawing on Bryman (2006), provide a summary table describing different types of mixed methods design and rationales. This summary is reproduced as Table 9 below. Several major rationales for a mixed-method design serve exploratory, convergent, embedded or explanatory purposes.

Table 9: Rationales for Mixed Methods Research Design

Rationale[a]	Description[a]	Design Type[b]
Triangulation	Quantitative and qualitative combined to triangulate findings to be mutually corroborated	Convergent
Offset	Combining strands offsets their weakness to draw on the strengths of both	Convergent
Completeness	Bringing together a more comprehensive account if both quantitative and qualitative research is employed	Exploratory, Explanatory, or Convergent
Process	Quantitative provides an account of structures in social life but qualitative provides sense of process	Exploratory or Explanatory
Different Research Questions	Quantitative and qualitative each answers different research questions	Convergent
Explanation	One is used to help explain findings generated by the other	Explanatory
Unexpected results	When one strand generates surprising results that can be understood by employing the other	Explanatory, or Embedded
Instrument Development	Qualitative is employed to develop questionnaires and scale items	Exploratory
Sampling	One approach is used to facilitate the sampling of respondents or cases	Exploratory or Explanatory
Credibility	Employing both approaches enhances the integrity of findings	Exploratory, Explanatory, or Convergent
Context	Qualitative providing contextual understanding coupled with either generalizable, externally valid findings or broad relationships among variables uncovered through a survey	Explanatory, or Embedded
Illustration	Qualitative to illustrate quantitative findings (putting 'meat on the bones' of 'dry' quantitative findings	Explanatory
Utility	Among articles with an applied focus, the combining the two approaches will be more useful to practitioners and others	Exploratory, Explanatory, Convergent, or Embedded
Confirm and Discover	This entails using qualitative data to generate hypotheses and using quantitative research to test them within a single project	Exploratory
Diversity of View	Combining researchers' and participants' perspectives through quantitative and qualitative research respectively, and uncovering relationships between variables through quantitative research while also revealing meanings among research participants through qualitative research.	Convergent, or Embedded
[a] From Bryman (2006) **[b] From Harrison & Reilly (2011) – Source: Harrison & Reilly (2011) and Bryman (2006)**		

Exploratory designs involve the collection of qualitative data, followed by gathering quantitative data in order to investigate the variables for generating hypotheses, verifying a developing theory or qualitative findings (Creswell & Clark 2017). Guenzi and Troilo (2007) pointed out that due to the lack of empirical research for the topic area, their study started with

a qualitative method to gain better insights before developing the quantitative survey. The qualitative method phase allows researchers to have a deeper understanding of the phenomenon, which then enables them to develop more specific and focused questions in the following quantitative phase (Harrison 2013).

Convergent designs comprise the collection of both qualitative and quantitative data simultaneously in order to strengthen the dataset and allow a comparison of results or to justify quantitative results with qualitative results. This mixed-methods design could either employ concurrent convergent design (which ask similar questions but obtain different point of views from different samplings or ask different questions but ask related questions to the same sample population).

The embedded designs lodges one type of data collection effort within a larger design requiring the other type of data. In the embedded design research, data from both quantitative and qualitative strands are collected concurrently. Hereby, the results of these data are analysed and compared.

An explanatory design is employed when the researchers want to investigate trends and relationships with quantitative data and explain the reasons behind the quantitative results. The same logic applies to the present study, as much remains to be understood about how businesses set climate change targets and report their activities. My study adopted an explanatory design in which I first collect and analyse quantitative data (content analysis), then build on those findings in qualitative follow up stages (discourse analysis and semi-structured interviews). The design was chosen in order to identify phenomena which would help provide a better understanding of the quantitative results (why there is a low level of corporate climate change target setting and reporting from corporate managerial perspectives and what is the actual

meaning of the corporate climate change targets, at least in the minds of the managers interviewed).

Each method and data set will be described in detail in Section 4.3. Using content analysis, my study tested the quality of corporate climate change disclosure, analysed the carbon target reporting in regards to quantitative targets/qualitative targets, target performance classification and planetary boundaries classification. I also examined the motivations behind reporting environmental performance against these targets. Then, these quantitative results were supplemented with qualitative data collected from discourse analysis to identify questions that needed further exploration. These included corporate identities adopted in mitigating climate change and the assessment of the extent climate change targets are aligned with the Paris Accord – or climate scientific thresholds. In-depth interviews with selected respondent organisations were conducted following preliminary content and discourse analysis to understand the motivations behind corporate setting targets and disclosure. Of particular interest were the questions of what corporate managers are willing to do and not to do in terms of setting and reporting emissions reduction targets; the actual meaning-making of the corporate climate change targets.

A mixed-method approach is therefore appropriate for addressing my research questions. This is justified in that it offers the potential to investigate the importance of climate change to the businesses, the processes related to environmental target setting and reporting against the defined targets. Understanding these will ultimately provide an explanation of actual corporate behaviour and practices companies rely upon in setting and reporting climate change targets, along with identifying the factors that influence corporate target setting and willingness of corporate managers to set beneficial climate change targets. A mixed-method approach in my study will better, more deeply inform understanding about the applicability of legitimacy theory and institutional theory.

5.2.2. Sample Selection

My initial sample consisted of the top 50 listed corporations (by market capitalisation) which enjoyed consecutive membership of the NZX (New Zealand Stock Exchange) for the years 2012 to 2016. These firms were selected because they cover a broad range of industries. This wide cross-section of industry sectors represented will provide different examples of formalised climate change response and practices and a broader range of justification for these initiatives (Wright & Nyberg 2012). The companies under study thus belonged to a range of different industries representing a total of 10 sectors. The top four most represented sectors included Financials (24%), Consumer Staples (16%), Consumer Discretionary (16%) and Healthcare (14%). The breakdown of industry representation is presented as Table 10.

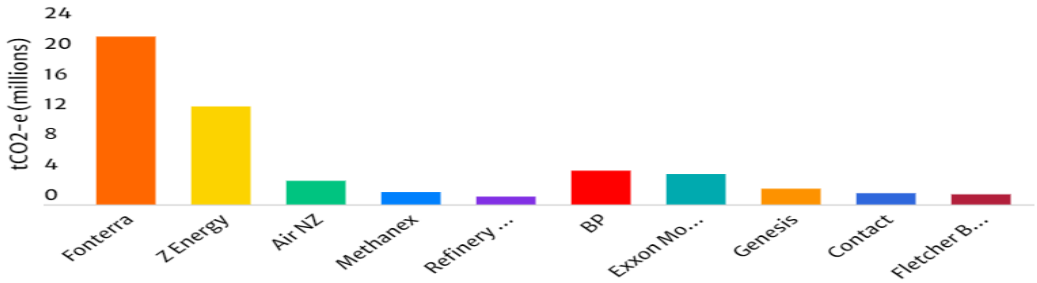
Table 10: Study Sampling and Industry

Industry	Number of companies	Percentages
Technology	1	2%
Consumer Staples	8	16%
Consumer Discretionary	8	16%
Financials	12	24%
Industrials	4	8%
Communications	4	8%
Healthcare	7	14%
Materials	2	4%
Utilities	3	6%
Energy	1	2%
Total	50	100%

Arguably, climate responses of these top 50 NZX listed companies are strategically important for New Zealand to achieve its emissions targets and evolve mitigation capability. As noted in Section 4.2 (New Zealand's Greenhouse Gas Emissions Profile), the majority of New Zealand's total emissions come from the agriculture and energy sectors. Together, these sectors account for almost 90 percent of total country emissions. The majority of the companies sampled for this study come from the agriculture and highly intensive energy sectors, more

particularly, consumer staples (e.g., Fonterra, PGG Wrightson, Sanford and Warehouse Group), consumer discretionary (e.g., Air New Zealand, Kathmandu, Sky City Entertainment), energy (New Zealand Refining, Z Energy), utilities (e.g., Vector, Contact Energy, Mercury, Meridian, Genesis), materials (Fletcher Building) and industrials (Auckland International Airport, Mainfrieight). These companies emit substantially more GHG emissions than the rest of the New Zealand business community combined. Figure 18 below illustrates ten companies that were responsible for more than 70 percent of New Zealand's total emissions, producing 54.5 million tonnes of CO_2 in 2018. Seven of these were included in my sample. Of these, Fonterra - New Zealand's largest company - leads the way with 22 million tonnes of CO_2-equivalent emissions. Following are three large petrol companies including Z Energy. Other big emitters in my sample include Air New Zealand, Refinery, Genesis, Contact and Fletcher Building.

Figure 18: New Zealand's Biggest Emitters



Source: Mac Manus and Nadkarni (2019)

In addition, the size of the firms and their CO_2 emissions means their climate response is of great importance to New Zealand's climate change strategy. This is due to the heightened exposure to associated economics, regulatory, reputational and physical climate risks and opportunities. They should, therefore, be more likely to adopt the best climate change practices and be more concerned about their environmental disclosures (Brammer & Pavelin 2006). Given their greater capacity and (presumed) responsiveness, it is expected that requirements in corporate climate change target setting and reporting are more effective among this group of

very large firms. This might be due to commitments – for example, the NZX Corporate Governance Code requires listed companies to disclose information on social, environmental and governance matters in their annual reports. However, if these requirements have little influence, then it would raise questions about whether the Government's regulations influencing business engagement with climate change through target setting and reporting requirements are really effective.

To collect data from the narratives published by these listed companies, their websites were examined for disclosure of GHG emissions targets. The prime source of data was the annual report. This is consistent with previous research done in the area (for an example, see Hackston and Milne (1996)). Annual reports were chosen as the primary data source for their regularity in publication. Annual reports also represent an official way of reporting on a corporation's performance (Aluchna & Ragodoo 2009). Corporate sustainability reports have also been used to obtain climate information and also take full advantage of the mixed-method approach. The five year period of corporate reports from 2012 to 2016 were analysed for all companies, with a focus on consistency with the global stocktake required in the Paris Agreement 2015. In particular, every country that ratified the Agreement is required to undertake a review of what they have done and what they need to do every five years (starting in 2030) to meet the 2^{o}C. In New Zealand, the Climate Change Commission has set 5-year emissions budgets: 2022 – 2050; so previous periods of 5 years and 10 years would be 2017-2021; 2012-2016, respectively. A carbon budget can be defined as a tolerable quantity of greenhouse gas emissions that can be emitted in total over a specified time. The budget needs to be in line with what is scientifically required to keep global warming and thus climate change "tolerable." (UNFCCC, 2014). And additionally, by the time I started my PhD in March 2017, the most currently available public reports were the annual reports and/or sustainability reports on 2016 performance and therefore, consideration of a five-year period must be a period range from 2012-2016.

5.3. Data Collection

The mixed-method approach for this study consists of content analysis, discourse analysis and fieldwork. These were employed to make sense of corporate climate response, where each method has a different strength. A summary of the attributes of technique, purpose, target and source are summarised in the Table 11:

Table 11: Summary of the Study's Mixed-method Approach to Data Collection

Data Collection Stage/ Techniques	Purpose	Target	Source
Content analysis	To measure the quality of corporate climate disclosure To analyse carbon target setting (quantitative/qualitative; planetary boundaries related; environmental performance against targets)	50 NZX listed organisations	Annual reports, corporate websites and corporate sustainability reports
Discourse analysis	To identify corporate identities adopted in mitigating climate change To assess the extent corporate climate change targets are aligned with the Paris Accord	19 climate reporters	Annual reports and corporate sustainability reports
Fieldwork study (Semi-structured interviews)	To investigate the actual mean-making of the corporate climate change targets To understand managerial motivations behind corporate target setting (what corporate managers willing to do/not to do in terms of setting and reporting climate targets)	29 interviews with 23 organisations	14 climate reporters in the sample[1] 4 non-reporters in the sample[2] 5 Science-based targets approved or committed companies (not in sample)[3]

The research stages of a mixed-method approach are discussed in detail hereafter.

[1] Chorus, Kathmandu, Fletcher Building, Kiwi Property, Warehouse Group, Fisher and Paykel Healthcare, Auckland International Airport, Goodman, Freightways, Spark, PGG, Contact Energy and Z Energy

[2] Fonterra, Vector, Precinct, Tourism Holdings

[3] EnviroMark Solutions, Synlait Milk, NZ Post, and Thinkstep

5.3.1. Content Analysis

The purpose of content analysis was to test the quality of corporate climate change disclosure, analyse carbon target reporting in regards to qualitative/quantitative targets, target performance classification and planetary boundaries classification. This data collection stage identified the trends in climate change reporting by top NZX 50 listed companies in order to begin explaining organisational reporting perspective for climate change.

Content analysis is a method of codifying the text (or content) of a piece of writing into numbers of categories depending on reasoned criteria (Weber 1988). Guthrie and Abeysekera (2006 p. 120) define content analysis as "a technique for gathering data which consists of codifying qualitative and quantitative information into pre-defined categories in order to derive quantitative scales of varying levels of complexity". Content analysis allows more reliable and valid data to be analysed (Krippendorff 2004). Content analysis is one of the most popular methods and is utilised in a large number of studies focusing on social and environmental accounting, collecting data from publicly available corporate reports (e.g., Aerts & Cormier 2006, Guthrie *et al.* 2008). There are preferred measures for the content analysis of social and environmental accounting research papers. These include word counts, sentences counts, and frequencies of disclosure, measures often utilised in research (for example, see Hackston and Milne (1996), Gray *et al.* (1995), Islam and Mathews (2009), Kamal and Deegan (2013) and Haque and Deegan (2010).

The first phase of the present study utilised content analysis for a systematic categorisation and analysis for the content of greenhouse gas emissions (GHG emissions) disclosure and GHG emissions target disclosure at the level of phrase, clause or theme. The number of sentences/phrases will be used to indicate the significance of each category of GHG emissions targets disclosure. The analysis of phrase, clause and theme is recommended by Beattie and Thomson (2007) and Beattie *et al.* (2004) because (1) it captures meanings of entire paragraphs without allocating a meaning by word or sentence; (2) the unit of analysis at the level of theme

allows coders to separate a sentence or paragraph into individual themes without binding by grammatical unit (Campbell & Rahman 2010) and (3) using the orientation that other studies or published pieces of work have relied upon justifies the use of that means of coding (Linsley & Shrives 2005).

Milne and Adler (1999) and Hackston and Milne (1996) suggested that the level of sentences provide complete, reliable and meaningful units of data for further analysis. However, a problem arises with the use of sentences/phrases as a single sentence can be coded to multiple categories of information. This would lead to a double-recording problem. It is, therefore, a contradiction to the principle of mutual exclusiveness (Rahman 2016). In this circumstance, the researcher needs to judge subjectively by establishing appropriate, rigorous coding rules. Without such rules, the reliability of data captured might be compromised.

5.3.1.1. Step 1: Coding content diversity

In their survey of reporting practices, KPMG (2017) indicated that the Global Reporting Initiative (GRI) standard is the most commonly used standard, applied in 63 percent of N100 reports (from 4,900 companies comprising the top 100 companies by revenue in each of the 49 countries researched) and 75 percent of G250 reports (from 250 largest companies by revenue based on the Fortune 500 ranking of 2016). With 2,230 N100 companies applying the GRI Framework, 88 percent use GRI G4 and 10 percent use GRI Reporting Standards. Only 2 percent of these companies use GRI G3. GRI G1 was the first version of GRI Guidelines, launched in 2000. In 2002 and 2006, GRI issued the second and third updated version of GRI Guidelines, named GRI G2 and GRI G3, respectively. In 2016, GRI launched the GRI Sustainability Reporting Standards, which is the first set of global standards for sustainability reporting (GRI 2020).

The environmental category of GRI G4 has twelve aspects relevant to reporting. These include Materials, Energy, Water, Biodiversity, Emissions, Effluents and Waste, Products and

Services, Environmental Compliance, Transport, Overall (Total environmental protection expenditures and investment by type), Supplier Environmental Assessment and Environmental Grievance Mechanisms. This study focuses only on the aspect of Emissions. This aspect includes seven indicators of greenhouse gas emissions as well as the ozone-depleting substances, NOx, SOx and other significant air emissions (emissions indicators EN 15 to EN21 are identified in Table 12 below). Reporting of GHG emissions is based on the reporting requirements of the World Resources Institute and the World Business Council for Sustainable Development "GHG Protocol Corporate Accounting and Reporting Standard" (GHG Protocol 2015).

Table 12: GRI G4 – Emissions Indicators

Order	Indicator	Emissions
1	EN 15	Direct GHG emissions (Scope 1)
2	EN 16	Energy indirect GHG emissions (Scope 2)
3	EN 17	Other indirect GHG emissions (Scope 3)
4	EN 18	GHG emissions intensity
5	EN 19	Reduction of GHG emissions
6	EN 20	Emissions of ozone-depleting substances
7	EN 21	NO_X, SO_X and other significant emissions

Source: GRI G4 Reporting Principles and Standard Disclosures (2015)

A critical and comprehensive analysis of the corporate website, annual reports and corporate social and environmental reports (from the financial year 2012 – 2016) of the entire sample of 50 companies was implemented to obtain available climate information. Disclosure of information relevant to climate change will be published in these resources. The data provided by 50 corporate websites, 250 annual reports and 52 corporate sustainability reports (CSR) were manually collected and systematically analysed. That is, all of the webpages on the website and pages in corporate documents are read individually and comprehensively to identify terms, figures, and infographics related to climate change. The reporting companies,

emissions disclosure years and emissions target disclosure years are identified in Table 13 below.

Table 13: The Reporting Companies, Emissions Disclosure Years and Emissions Target Disclosure Years

Company	Sector	Emission Disclosure Years	Emission Target Disclosure Years
Air New Zealand Ltd	Consumer Discretionary	2015, 2016	2015, 2016
Auckland International Airport Ltd	Industrials	2016	2012, 2013, 2015, 2015, 2016
Chorus Ltd	Communications	2013, 2016	-
Contact Energy Ltd	Utilities	2013, 2014, 2015, 2016	-
Fisher and Paykel Healthcare Corp Ltd	Healthcare	2012, 2013, 2015, 2015, 2016	2014, 2015, 2016
Fletcher Building Ltd	Materials	2012, 2013, 2015, 2015, 2016	2012, 2013, 2015, 2015, 2016
Freightway Ltd	Industrials		2016
Goodman Property trust	Financials	2014, 2015, 2016	-
Kathmandu Holdings Ltd	Consumer Discretionary	2012, 2013, 2015, 2015, 2016	2014, 2015, 2016
Kiwi Property Group Ltd	Financials	2016	2013, 2014, 2015, 2016
Main freight Ltd	Financials	2012, 2013, 2015, 2015, 2016	2012, 2013, 2015, 2015, 2016
Millennium and Cop throne Hotel	Consumer Discretionary	2012, 2013, 2015, 2015, 2016	2016
New Zealand Refining Co Ltd	Energy	2012	-
PGG Wright son Ltd	Consumer Staples	2012, 2013, 2015, 2015, 2016	-
Sanford Ltd/ NZ	Consumer Staples	2012, 2013, 2015, 2015, 2016	2016
SKYCITY Entertainment Group Ltd	Consumer Discretionary		2016
Spark New Zealand Ltd	Communications	2012, 2013, 2015, 2015, 2016	2016
Trade Me Group Ltd	Communications	2014, 2015	-
Warehouse Group Ltd	Consumer Staples	2013, 2015, 2015, 2016	2016

It is noteworthy that only 19 companies belonging to a range of different industry sectors report carbon information. Sectors and the number of companies comprising this study's sample are presented in Table 14. This is followed by Table 15, which provides a listing of the companies in the sample and the type of content disclosure they rely upon.

Table 14: Reporting Companies by Sectors

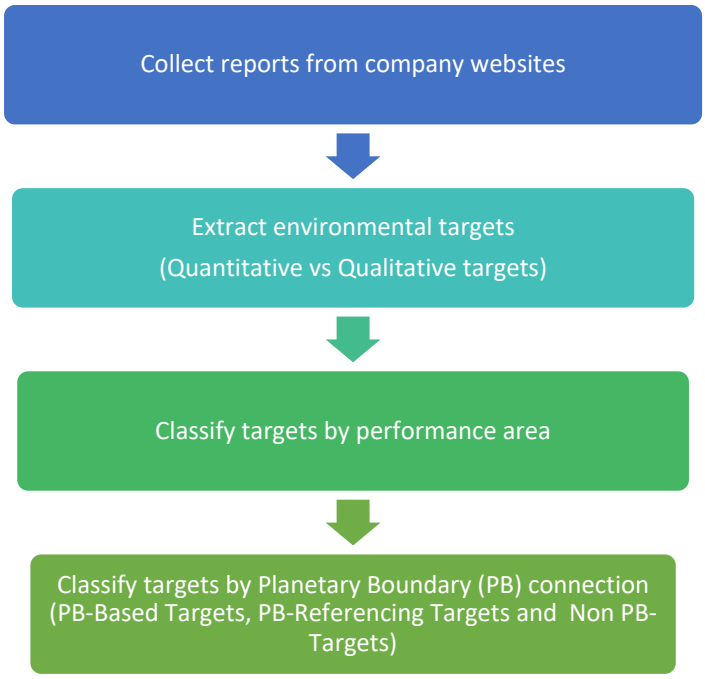
Industry	Number of companies	Percentage
Consumer Staples	3	15.78%
Consumer Discretionary	4	21.05%
Financials	3	15.78%
Industrials	2	10.52%
Communications	3	15.78%
Healthcare	1	5.27%
Materials	1	5.27%
Utilities	1	5.27%
Energy	1	5.27%
Total	19	100%

Table 15: Number of Companies Reporting Categorised by GHG Disclosure and Targets; GHG Disclosure Only, Target Disclosure Only and Non-Disclosure

Content Disclosure	Number of Companies	Name of Companies
Emission Disclosure + Target Disclosure	11	Air New Zealand Ltd Auckland International Airport Ltd Fisher and Paykel Healthcare Corp Ltd Fletcher Building Ltd Kathmandu Holdings Ltd Kiwi Property Group Ltd Main freight Ltd Millennium and Cop throne Hotel Sanford Ltd/ NZ Spark New Zealand Ltd Warehouse Group Ltd
Emission Disclosure only	6	Chorus Ltd Contact Energy Ltd Goodman Property trust New Zealand Refining Co Ltd PGG Wright son Ltd Trade Me Group Ltd
Target Disclosure only	2	Freightway Ltd SKYCITY Entertainment Group Ltd
No Disclosure	31	A2 Milk, Abano Healthcare, Argosy Property, Briscoe Group, CDL Investments, Colonial Motor Company, Comvita, Delegat Group, EBOS Group, Fonterra Shareholders Fund, Green Cross Health, Heartland Bank, Hellaby Holdings, Infratil Ltd, NZX, Pacific Edge, Port of Tauranga, Property for Industry, Restaurant Brands, Ryman Healthcare, Skellerup Holdings, Sky Network Television, Steel and Tube Holdings, Summerset Group Holdings, T&G Global, Tourism Holdings, Turners Automotive Group, Vector, Vital Healthcare Property Trust and Xero

In a study using content analysis, Haffar and Searcy (2017) highlighted that corporate environmental targets extracted from reports varied widely in terms of the type of company performance they address. This present study will borrow Haffar and Searcy (2017)'s method, and is graphically presented in Figure 19 below:

Figure 19: A Framework for Analysing Carbon Target Reporting



Source: Haffar & Searcy (2017)

After collecting the sustainability and annual reports from each company's website, all carbon targets were identified. Haffar and Searcy (2017, p.11) defined targets as "specific performance objectives that are intended to achieve within a specific timeframe". These objectives may refer to either quantitative or qualitative performance changes. Quantitative targets are based on a specific baseline and state the timeframe in which the target is expected to be achieved. Qualitative targets are derived from non-numerical performance goals stated in the reports with reference to a specified timeframe.

The next step in data analysis include classification of targets by performance area. Haffar and Searcy (2017) categorised GHG targets into five different groups; GHG reduction, Green Commuting, Reporting, Fuel Efficiency and Carbon offset. Such categorisation assisted a

better understanding of the types of targets set by the companies. Examples of these are provided in Table 16. Other categories relevant to emissions reporting could include " improved energy efficiency, waste reduction and recycling, emissions reductions, green culture, green marketing and branding, green products and services, supply chain management, reporting, alliance building, advocacy and lobbying" (Wright & Nyberg 2017, p. 24).

Table 16: GHG Category and Examples

GHG Category	Target Example
GHG Reduction	5% reduction in gross GHG emissions intensity by 2015
Green Commuting	Increase access to eco-friendly commuting options by 10% by the next reporting cycle
Fuel Efficiency	5% reduction in driver idle time by the next reporting cycle
Carbon offset	Offset 40% of gross GHG emissions

Source: Haffar & Searcy (2017, p. 25)

The following stage was categorising targets based on the planetary boundary framework. This data collection stage serves the purpose of clarifying whether these targets were science-based targets/planetary boundary-based targets.

The planetary boundary indicator for the GHG emissions defines the maximum atmospheric CO_2 concentration (or carbon budget) can be emitted globally (this was discussed in detail in Section 2.3.3). A safe limit means that in order to have a chance to limit global warming rise to less than 2°C by the end of this century, the corporate GHG emissions reduction targets need to be aligned with this global carbon budget. Corporate targets on the basis of their connection to the planetary boundary framework are also referred to as planetary boundary-based targets/science-based targets (Haffar & Searcy, 2017). Corporate science-based targets quantitatively tied to global CO_2 concentration would qualify as a planetary boundary-based target. The planetary boundary referencing target is the target set with an explicit commitment

to considering ecological consequences of the corporate impact on the global process of climate change or targets with a qualitative connection to the planetary boundary framework. Targets without any connection to the planetary boundary framework are referred to as being the non-planetary boundary.

My study considers science-based as those that are in line with the level of decarbonisation required to keep global temperature increase below 2^{o}C compared to pre-industrial temperatures (indexed to the year 1850) as defined by the Intergovernmental Panel on Climate change (IPCC AR5). The science-based GHG reduction targets were developed by the Science-Based Targets Initiatives in a joint effort of the Carbon Disclosure Project, the United Nations Global Compact, World Wildlife Fund and the World Resources Initiative. By the end of August 2020, 972 companies were taking science-based climate action, and 454 companies had approved science-based targets. In New Zealand, there are eight companies with science-based approved targets. These are Auckland Airport, Enviro-Mark Solutions, New Zealand Post, Skycity Entertainment Group, Contact Energy, thinkstep Australasia, Fisher and Paykel Healthcare and Fletcher Building. An additional five companies (the Warehouse Group, Synlait Milk, Ports of Auckland, Kiwi Property Group, Genesis Energy) are committed to setting science-based targets in the next two years.

5.3.1.2. Step 2: Coding on the information content scale – Content Quality

Previous studies conclude that quality of disclosure cannot be measured when data is analysed via word counts, sentence counts and page proportions (e.g., Beattie *et al.* 2004). The level of reporting quality shall consist of a comprehensive reporting style respecting nature of reporting, scope, coverage and time periods. These are more difficult to assess as they require knowledge of corporate and industrial activities (Hammond & Miles, 2004).

For coding emission disclosure, seven GRI G4 indicators (EN 15 to EN21) scored on a scale of 0-3 evaluated the degree of fulfilment of a criterion on emission disclosure. This rating scale

was based on Daub's study (2007, p. 83) that assessed the quality of sustainability disclosure and is presented in Table 17.

Table 17: Rating Scale of Sustainability Disclosure

0	1	2	3
No meaningful information is provided on the specific criterion	Patchy information is provided	The reporting provides good information on the criterion. However, one relevant area is not addressed	The reporting includes full information to the criterion

Source: Daub (2007, p. 83)

A maximum score of 21 points across seven GRI G4 indicators could be awarded for each year – totalling 105 points over a period of five years. The maximum score of each criterion was 3 points. Depending on the quality of disclosure, each item received a rating between 0 and 3. Finally, the total of all individual criterion scores was summed up to calculate a value of disclosing assessment.

5.3.1.3. Step 3: Four categories of reporting environmental performance against these targets

The purpose of this study is to understand the managerial motivation behind corporate environmental target setting and reporting. To do so, it is necessary to examine performance against stated targets. Four categories can describe performance against targets, presented in Table 18 below.

Table 18: Disclosure of Environmental Performance against Targets

Category	Definition
1	Target met and disclosed
2	Target not met and disclosed
3	No disclosure (not known whether target met or not met)
4	Replacement/New Target

Source: Slack & Jones (2010)

Slack and Jones (2010) contend that firms might be motivated to disclose their met targets and less so with failed targets. Alternatively, firms might decide to change their targets by redefining, discontinuing or setting new targets. Such changes make it difficult for stakeholders to keep track of corporate progress in reducing environmental impact (Dusek & Fukuda 2012). This finding is consistent with legitimacy theory by suggesting that the environmental target setting and reporting will not make any significant difference in environmental performance. Firms may want to gain their legitimacy via reporting on environmental targets as a way to promote a positive environmental image of a firm.

The following sub-section discusses in detail the discourse analysis in my study. This stage of data collection aims to identify corporate identities adopted in mitigating climate change and the assessment of the extent to which climate change targets are aligned with science-based targets. Some examples of extracts and codings from the content analysis are presented in Table 19 as below:

Table 19: Examples of extracts and codings from content analysis phase

Company	Target Statement	Target Types		GHG Target Categories					Classify Target by PB connection			Performance			
		Hard Target	Soft Target	GHG Reduction	Green Commuting	Reporting	Fuel Efficiency	Carbon offsetting	PB based	PB Referencing	No PB based	Met and Disclosed	Not met and disclosed	No Disclosure	Change of Target
Fletcher Building Ltd	To reduce overall group carbon emission intensity by 10% from 2012 to 2020 (SR, 2016, p26)	✓		✓						✓		✓			
Air New Zealand	1.5% average annual fuel efficiency improvement between 2009 and 2020 (SR, 2016, p. 26)	✓					✓			✓		✓			
Warehouse Group	Replaced with ambitious, science-based target of a reduction (on FY15) of 10% by 2020 and 32% by 2030 (AR 2016, p.150)	✓		✓						✓					✓

5.3.2. Discourse Analysis

Discourse analysis focuses on what firms and their managers have to say about corporate climate change target setting and reporting. What do organisations and managers mean when they refer to climate change targets. I chose an interpretive approach for the discourse analysis which is described in detail below.

5.3.2.1. Definition of discourse analysis

Discourse is the associated set of texts which is demonstrated in written passages, spoken words, and pictures. It brings an object and idea into being through the practice of construction, reproduction, challenging, dissemination and transformation (Parker 1992). Texts are not meaningful individually. Meaningfulness of the text occurs through their interconnections. Through discourse, social reality is made and social interactions can only be fully understood when attributed to the discourse that gives them meaning (Foucault 1965). To understand the constructive effects of discourses, researchers must locate them historically and socially. Hence, the meanings of any discourse are

> "created, supported, and contested through the production, dissemination, and consumption of texts; and emanate from interactions between the social groups and the complex societal structures in which the discourse is embedded" (Hardy 2001, p. 28).

Hardy *et al*. (2004) defined discourse analysis as a qualitative and interpretive method for analysing social phenomena. It examines the processes in which the constitutions, maintenances and developments of ideas and objects were constructed socially and become popular in the world. Discourse analysis explores the sense-making of the texts and social reality through these processes and the contribution of these processes to the constitutions of social reality (Phillips & Brown 1993). Discourse analysis uncovers the

way in which social reality was produced by understanding the social meaning of reality for actors (e.g., Geertz 1977).

5.3.2.2. Content Analysis vs Discourse Analysis

Both discourse analysis and content analysis could be utilised to examine social reality. However, the fundamental difference between the two methods is the nature of social reality and the role of language (Hardy *et al.* 2004). First, discourse analysis highlights the dedicated nature of meaning and it concentrates on exploring the change in meaning while content analysis is based on an assumption of meaning consistency that allows counting of text units. Second, discourse analysis is concerned with the association between text and context while content analysis focuses on the extraction of the text from its context. And finally, discourse analysis focuses on the development of meaning-making and how the changes of meaning are made over time, while the basic assumption of content analysis is one of consistency and stability of meaning (Hardy *et al.* 2004).

In content analysis, a coding scheme allows measurement in great detail. Beattie (2014) commented that the prevailing form used was quantitative content analysis, which brings about the transformation of text into numbers and offers a summary description of the text which can subsequently represent determinants or consequences. The coding instrument is developed prior to coding. It serves as a matrix for anyone with sufficient training to replicate the coding results once carried out by the researcher. This is in contrast with discourse analysis, for which the researcher serves as the measurement instrument (Neuendorf 2004).

In my research, three methods of data collection were adopted; discourse analysis, content analysis and fieldwork study. Discourse analysis and content analysis represented a good fit for triangulation because discourse analysis provides a rich source of

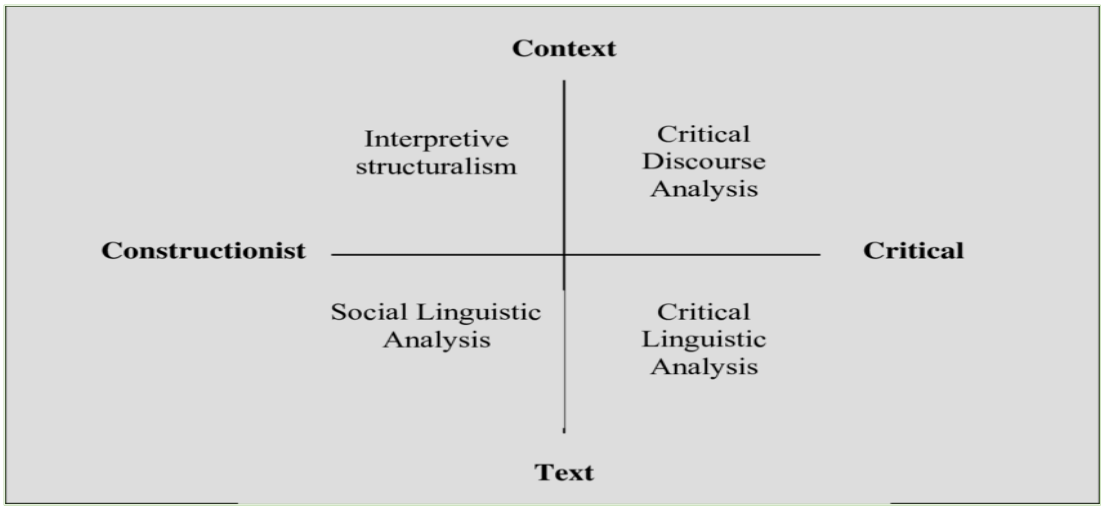
contextual data, and forms a big picture of (1) why climate change is a business issue; (2) what identities corporations adopt or present in mitigating climate change and (3) whether corporate climate change targets are consistent with the 2^{o}C policy framework domestic and international institutions are pressing. Discourse analysis, therefore, more likely allows the discovery of the variety and richness of communication (Neuendorf 2004).

5.3.2.3. An approach of discourse analysis in this study

Phillips and Hardy (2002) emphasised that the theoretical dimension of discourse analysis concerns to what extent the dynamics of power construct the focus of the research – a more critical approach versus a more constructivist approach.

A constructivist approach explores the way in which an incident of social reality has been shaped rather than exploring who is advantaged or is disadvantaged by it. Constructivists are more interested in "understanding the way in which discourses ensure that certain phenomena are created, reified and taken for granted and come to constitute that reality" (Phillips & Hardy 2002, p. 20). A critical approach produces an explicit focus on the power, knowledge, and ideology dynamics through carefully examining discursive processes. The Foucauldian critical approach uncovers the extent to which grand or mega discourses form social reality by emphasising the privileges inherent in the situation and its constraining effects. Phillips & Hardy (2002, p.20) provided a graphic comparison of these two views, yielding four different approaches to discourse analysis, reproduced as Figure 20 below.

Figure 20: Approaches to Discourse Analysis



Source: Phillips & Hardy (2002, p. 20)

Empirical studies focus more closely on either the broad social context or on a particular piece of text. Broader global, social, political and cultural contexts rather than individual pieces of text are more relevant for my study in climate change because climate change and corporate climate change targets are a politically important indicator of future managerial environmental plans at the global level.

In Paris, 2015, 195 countries agreed to limit global warming to no more than 2°C (Carbon Trust 2016). Under the Paris Agreement, New Zealand set a target to reduce 2030 emissions to 30 percent below 2005 level (or 11 percent below 1990 level). However, the Climate Action Tracker argues that this commitment is insufficient than their fair share range and not consistent with the Paris Agreement. If all government targets were in this range, the average global warming will reach to 3°C to 4°C. In other words, New Zealand's commitment has failed to provide an appropriate response to mitigate climate change, and this in part provides a context in which my sample of organisations respond to emissions reductions demands.

New Zealand relies heavily on the NZ ETS to mitigate climate change. Unfortunately, the NZ ETS has provided little incentive to drive significant emissions reduction.

Currently the price of tonne CO_2 equivalent sits on NZ$ 17-18 which is further protected with a price ceiling of NZ$35 per tonne (Ministry for the Environment 2020). It is considered low carbon credit prices for each New Zealand carbon unit encourage payment of emissions prices rather than seeking emissions reductions (Numan-Parsons *et al.* 2011). The IPCC estimates global carbon prices will need to be in the range of $60-$200 NZD per tonne by 2030 in order to drive sufficient effort to limit the global warming to less than 2ºC (Ministry for the Environment 2015). In addition, the Government's provisional carbon budget for 2021-2030 does not point to further mitigation in the agriculture sector, which allows the sector to free ride.

In 2019, the Climate Change Response (Zero Carbon) Amendment Act was passed in New Zealand, with a target of net zero-carbon by 2050. This was intended to drive meaningful climate change action in New Zealand in order to limit the average global warming increase to below 2ºC over the next 30 years. Disclosure of corporate GHG emissions and targets will be expected to continue increasing. A very small number of New Zealand companies are setting emissions reduction targets which are in line with the planetary boundary level. However, the majority of companies might have set targets that do not challenge business operations, without undertaking any necessary or radical change. Companies can adopt a mimetic approach to help deal with institutional norms and pressures while maintaining their legitimacy. Therefore, communicating climate change commitment might not be reflected in concrete action on climate change issues, and hence achieve an absolute GHG emissions reduction.

Therefore, either interpretive structuralism or critical discourse analysis should be selected for the study on corporate climate change target setting.

5.3.2.4. Critical Discourse Analysis

Critical discourse analysis is an interdisciplinary approach that provides an analysis of written and spoken texts and talks that shape social reality and focuses on the construction, dissemination and challenges of the social and political domination (Fairclough 2010). The technique focuses on the role of discursive processes by dominant groups and institutions which describe and explain the constitution, enactment and maintenance of unequal power relations (Fairclough & Wodak 1997, van Dijk 1996). This perspective focuses on the extent to which the privileges of social actors are gained at the expense of others and on how the power dynamics between firms and their audiences in the discourse result in various sorts and levels of advantage and disadvantage, particularly within the Foucauldian tradition. Critical discourse analysis adopts "a more explicit analysis of political strategies, are shaped and help to shape this context" (Phillips & Hardy 2002, p.7).

The critical tradition focuses on the domination of the organisation in society. A range of critical social theories such as Marxism, critical theory as associated with the Frankfurt School, Bourdieu and various forms of critical analysis, including Fairclough (1995) and Laclau and Mouffe (1985) are often utilised to investigate the power dynamics between firms and their stakeholders. The critical discourse approach is closely related to rhetorical traditions which also emphasise the role of rhetoric in the constitution of concepts, knowledge and power relations (Merkl-Davies & Brennan 2017).

Fairclough (2010) operationalised the dialectic relationship between linguistic features of texts and social context in a framework consisting of three levels of analysis, namely (1) the micro-level, meaning the text itself, (2) the meso-level, focussed on the contexts of text production, distribution, reception and adaptation in the context of producing,

distributing, and receiving within a discourse community, and (3) the macro-level, which is the dynamic socio-economic context in which the discourse community is embedded.

Research by Tregidga *et al.* (2014) concentrated on the construction of organisational identity in sustainable development (i.e., asking what it means to represent an organisation as a sustainable organisation) by drawing on Laclau and Mouffe's (1985) discourse theory. They present a critical analysis of the evolving "sustainable organisation" identity and their effects, as formed in 365 publicly available corporate reports over a period of 1992-2010. Their findings show the extent to which maintaining the right to speak by organisations within the sustainable development debate occurs in the face of challenges and the hegemonic threat of sustainable development.

5.3.2.5. Interpretive Structuralism

Interpretive structuralism provides a focus on the social context and discourse analysis (Phillips & Hardy 2002). The paradigm is concerned with the way in which discourses ensure that certain phenomena are created, take place and are taken for granted and come to constitute how a reality is perceived.

Consistent with a constructivist position, Tregidga and Milne (2006) and Milne *et al.* (2009) took an interpretive structuralism approach to analyse corporate reports related to sustainability and also recognise the ability of discourse to serve as a strategic resource. These studies provide a view on what firms and their managers have to say and write about the concept of sustainable development, in other words, what organisations and managers mean when they refer to sustainable development. The disclosure of corporate sustainable development efforts is shown to present a pragmatic and critical analysis/interpretative discourse on companies and environment. The pragmatic discourse approach explains the corporate rhetorical claims of their sustainable

development whereas a critical analysis and interpretation approach reveals that the dominance of economic benefits instead of the natural environment are the main rationales for their sustainable practices.

This study borrows from the discourse analysis method used by Tregidga and Milne (2006) and Milne *et al.* (2009)'s discourse analysis methodology, taking an interpretive approach, particularly as follows:

First, I undertake initial readings of annual reports and sustainability reports (2012 to 2016 consecutively) from NZX 50 companies, extract climate change related information, emissions performance and target setting information. These extracts are articulated in terms of (1) why climate change is important to business; (2) what identities corporations present in mitigating climate change; and (3) what it means for an organisation with climate change target setting to be in line with the global target of 2^{o}C. I also make observations on what themes/issues are present in the wider context of climate change but are not present in the publicly available corporate reports.

Second, after all the extracts are coded, key themes are identified by examining where common discursive strategies were employed. For example, one of the themes to emerge is "leadership", whereby references to "leader", "leadership", "expert", "and knowledgeable" are used to articulate the corporate emissions mitigation, focusing on a position of competitive advantage for their organisations.

Table 20: Examples of Extracts and Codings from Discourse Analysis

Company	Code	Extracts
Contact Energy	**Leader**	We believe it's vital that we understand the (climate change) issues that are important to our key stakeholders. We take a consultative and open approach to working with stakeholders and aim to be **a leader in our industry** (Annual Report, 2013)
Vector	**Leader**	Vector is striving to foster environmental awareness in its business and embed it in our culture. We are also a strong advocate for renewable energy. For example, we are at the forefront of the solar and battery industries in New Zealand and in association with Entrust, we have been **a leader in the roll-out of electric vehicle (EV) charging infrastructure** in order to foster EV uptake (Annual Report, 2016).
Spark	**Leadership/Provider/Expert**	New Zealand environmental **leadership Spark New Zealand** is playing its part in **helping the country tackle the challenge of climate change**. We are already a low-carbon business and are focused on reducing our emissions further still. The nature of our telecommunications services also **help other New Zealanders transition to a low-carbon future**. (Annual Report, 2014)
PGG Wrightson	**Knowledgable/Expert**	PGG Wrightson Seeds is active in a number of programmes seeking to develop pastures and forages which improve environmental sustainability on-farm. PGG Wrightson is a member of **the Pastoral Greenhouse Gas Research Consortium, an industry-wide group seeking to develop technologies to reduce methane emissions from ruminant livestock.** The Company also participates in breeding and research programmes which aim to tackle issues such as: improved plant efficiency, increased drought tolerance and reduced nitrate leaching. **Good stewardship also requires that farmers undertake crop rotation and PGG Wrightson works closely with our seed growers and with our farmer customers to ensure appropriate practices are in place on-farm** (Annual Report, 2015).

My last stage of data collection adopts the semi-structured interviews method with an aim to understand the motivations behind corporate setting targets and disclosure. More

particularly, the corporate managers' willingness in setting and reporting emissions reductions targets and the actual meaning-making of these targets is explored.

5.3.3. Fieldwork study

The aim of the interview stage is to understand the motivations behind corporate target setting and disclosure, managers' willingness in setting and reporting GHG emissions targets and the actual meaning-making of these targets. Semi-structured interviews were carried out with senior managers related to climate change and greenhouse gas emissions from the top 50 listed companies on the NZX (by market capitalisation). Where possible and appropriate, the chief executive officer or the person who initiated climate change strategies was interviewed. Otherwise, sustainability managers and/or environmental managers who are responsible for looking into organisational climate change actions was selected. The higher hierarchical positions these individuals held, the more likely they were to have the knowledge and authority to implement organisational change towards becoming a low-emissions business. These individuals are, therefore, the most appropriate sources of information on the research topic (Birchall *et al.* 2016).

This PhD research might not capture all potential views from all potential perspectives on this topic. However, the perspectives on corporate climate change reduction target settings were explored arising from a fundamental set of questions within the interview timeline, among the majority of the sampled organisations.

Ten to 15 are a sufficient number of interviews for generating theoretical insights and to ensure the validity of the research (Creswell *et al.* 2003). Twenty-nine interviews with twenty-three companies were undertaken in this research. This sample consists of fourteen climate change reporters and four non-climate change reporters, which were successfully approached from the list of companies presented in Table 21 as follows. An

additional five companies (not in the NZX 50 sample) were also approached and interviewed as they are few companies operating in New Zealand that either have approved science-based targets (four companies) or are taking science-based climate action (one company). These were included in order to understand their motivations behind setting science-based targets, the processes involved in setting them, the key challenges as well as benefits of adopting these targets, and to observe what happens if their targets are not met. By August 2020, only eight New Zealand companies had their science-based targets approved and five other companies intend to commit to set science-based targets in the next two years (SBTi 2020).

Table 21: Climate Change Reporters vs Non-Reporters

CLIMATE CHANGE REPORTERS	NON-REPORTERS
1. **Albano**	1. A2 Milk
2. **Air New Zealand**	2. Briscoe Group
3. **Argosy**	3. CDL Investments
4. **Auckland International Airport**	4. Colonial Motor Company
5. **Chorus**	5. Comvita
6. **Contact Energy**	6. Delegate Group
7. **Fisher and Paykel**	7. EBOS Group
8. **Fletcher Building**	8. Freightways Ltd
9. **Fonterra**	9. Green Cross Health
10. **Goodman**	10. Heartland Bank
11. **Kathmandu**	11. Hellaby Holdings
12. **Kiwi Property**	12. Infratil Ltd
13. **Mainfreight**	13. NZX
14. **Millennium Hotels**	14. Pacific Edge
15. **PGW**	15. Property for Industry
16. **Port of Tauranga**	16. Restaurant Brands
17. **Precinct**	17. Ryman Healthcare
18. **Refining**	18. Skellerup Holdings
19. **Sanford**	19. Sky Network Television
20. **Spark**	20. SKYCITY Entertainment Group Ltd
21. **Tourism Holdings**	21. Steel and Tube Holdings
22. **Trade Me**	22. Summerset Group Holdings
23. **Vector**	23. T&G Global
24. **Warehouse**	24. Turners Automotive Group
	25. Vital Healthcare Property Trust
	26. Xero

A specific person who was involved in making decisions on carbon target setting and reporting from publicly available sources (often taken from the annual reports, sustainability reports, a section of the company's website or the LinkedIn website) were approached. I emailed the company seeking details of the relevant contacts. Where a response indicating a willingness to participate in the research was received, a schedule for an appointment was made for a subsequent interview.

I chose the semi-structured interview approach with open-ended questions for this study. This approach encourages respondents to talk about their perspectives on the predetermined topics and continue the discussion in the interview. This approach allows interviewees to provide more detailed information and more comments with examples drawn from their experience. This approach also allows me to raise additional questions for clarification. This helps to improve the reliability and validity of interviewee responses (Brand & Slater 2003).

The questions were derived from the extant literature drawing on prior research and the findings from content analysis and discourse analysis. These prior data collection phases provided evidence on (1) quality of climate change disclosure; (2) whether their emissions reduction targets were set and to what extent their targets are in line with the Paris Accord target; (3) how corporate climate change mitigation is constituted within corporate's reports; and (4) how corporate climate change identity is represented to cross validate information gathered from interviews. Additionally, content and discourse analysis evidence provided guidelines for the researcher during the interview, thereby enhancing the validity and reliability of findings.

Before undertaking interviews, additional documentary data was collected from companies that participated in this stage of the research. In particular, any corporate-

related policy and technical reports available on the corporate website such as submission to CDP, GHG inventory, submission to the Government and Regulatory Agencies were analysed. This helped to further triangulate data to determine if recognised practices will be applied throughout their business operations.

After a period of idea generation, questions relevant to the research aims and objectives were chosen, ordered and structured into a draft interview guide. To ensure questions were sound and drew the intended responses, a pilot study was carried out. Questions appearing in appropriate and not collecting relevant data were reviewed and revised. All participants responded to the same set of question to improve comparability of responses. The interview guide was primarily used to help manage the interview. It helped inform what questions have been asked or need to be revisited.

A general interview guide was outlined below covering seven main points:

Table 22: An Indicative Interview Guide

I. SECTION A: INTRODUCTION

Introduction

- Can you please introduce yourself and describe your role within your organisation?

General Opinion on Climate Change

- Do you think climate change is a major issue? Why do you think so?
- Eighty percent of global energy comes from fossil fuel and 20 percent of NZ emissions come from transport. What role does your sector play in mitigate the climate change? (and if so, what sorts of actions do you think New Zealand should be taking?)
- What is your general opinion of the Government's announcement on the Zero Carbon Bill last week which will set target in Law net-zero by 2050 for other GHG emissions?
- How this Bill will impact on your business and how would you prepare for this legislation change?

II. SECTION B: MANAGERIAL PERCEPTIONS AND ORGANISATIONAL PROCESSES THAT INFLUENCE CORPORATE GREENHOUSE GAS EMISSIONS REDUCTION TARGET SETTING AND REPORTING PRACTICES

GHG Emissions Measurement (Inventory)

1. When did you start measuring GHG emissions?
2. Which factors, had influenced/ received your organisation attention to start GHG emissions measurement? And Why?
3. What are your organisation's purposes for having a GHG inventory?
4. Can you describe the emissions measurement system at your organisation? How does it work and how has it evolved?
5. What is the biggest challenge in measuring your emissions?

GHG Emissions Management Systems

6. What does the management of emissions mean to your organisation?
7. What is your biggest challenge in managing GHG emissions?
8. What role do targets play in managing emissions?

GHG Emissions Target Setting and Reporting

Setting target is the main way for a company to show their commitment in dealing with climate change. In this section, the role and the effectiveness of target setting and emissions management will be focused on.

9. Do you see any differences between these types of targets: absolute, intensity and science-based? How and Why?
10. What does effective target setting mean to your organisation?
11. Which sources of pressure do you think can motivate companies to set a climate change-related target (14 out of 50 largest listed companies on NZX set climate change targets)?
12. Your organisation has a target of reducing carbon emissions by X percent by 2020. How do you set them? (in terms of what is the basis of selecting the level of target of X percent for which scope, what baseline year to compare future emissions with, in which year target will have to be achieved)

13. Can your organisation keep growing and expanding your business growth while reducing your absolute emissions of X percent in order to achieve your 2030 targets?
14. Does something need to change radically at a business to achieve the target?
15. Committing commitment is a critical issue, even for Government in the international political debate on climate change. Even New Zealand target is not in line with science-based requirement (to limit global warming less than 2ºC), but actually could reach over 2ºC and up to 3ºC warmers (According to Climate Action Tracker). Some claim that it is the trade-off between economic growth and emissions reductions. Do you think it is the reflection of the same thing with your organisation?
16. How does public reporting of carbon footprints, targets and achievements work in practices? Are these things companies choose not to publicly report? And if so, why?
17. What is your biggest challenge in setting the emissions reduction target?

Science-based target

According to the Paris Agreement, we have to half our emission every decade in the next three decade to be able to limit our temperature rise less than 2ºC.

Undoubtedly, we all agree that corporate reporting only on trends in their GHG emission performance is meaningless if the ecosystem capacity is not taken into account (i.e., how much the world's carbon budget we have left and how much emissions should an individual organisation be entitled to emit?).

18. Regarding the timing issue to achieve global emissions reduction, we need to peak our global emissions by 2020. Otherwise, it will carry us to a very dangerous condition. Does your organisation's response is immediate, fast and sufficient enough to help us meet the Paris Agreement?
19. To meet 2ºC targets, we have to keep 80 percent of fossil fuel under the ground. What will be the future of your organisation if it is the case to save us?

Others questions

20. What would you recommend New Zealand's policymakers in terms of allowing business making a meaningful target setting and reporting?

I asked interviewees for their permission to record our conversations. If the respondents allowed, a recording of the interview was made. Recording the interviews helped me to secure an accurate account of the conversations and avoid losing data since not everything can be written down during the interview. And every audio recording was saved in the computer and labelled with the date of interview, sector and name of the company in order to avoid complication.

Personal details of the respondents that would lead to the identification of participants (e.g., email addresses, expression of interest forms) were only retained until they

completed the interview or until they indicated that they did not wish to take part. However, if an interviewee said she/he would like to receive a summary of the research at the end of the study, I retained her/ his contact details until the summary of the research will be sent out.

The interviewees were not individually identifiable in the thesis. Where possible, however, in the email seeking to know whether the company was willing to take part in the research, I made them aware of this. They were offered the option to be identified and also give them greater control of their data. The confidentiality of all data collected was strictly observed and treated as a priority of the research.

The interviews were conducted through a face-to-face (on-site), web-based video conferencing or telephone interviews. The time and location of the interviews were arranged to the interviewees' convenience. Several researchers have noted that the face-to-face meeting can create a relaxed and friendly environment for the interview which is critical in stimulating interviewees to speak freely and openly about the topic and essential in gathering rich in-depth data (Bryman 2016), Tashakkori & Teddlie 1998), Morse & Niehaus 2009). A web-based interview or a telephone interview, however, is a cost-effective and quick alternative. These were utilised because only two companies in the sample had headquarters based in Christchurch City (the researcher's location), with the remainder of the samples based in different cities in New Zealand. They were predominantly based in Wellington and Auckland. The questions were pilot tested for any ambiguities in wording, to assess the flow of questions.

All data collection and storage devices remain password protected with a strong password. Access to identifiable data is limited to only the researcher and supervisors. All data collected on the audio recorder were transferred and stored electronically in the

personal file space on the University server as soon as possible after collection and deleted from the portable collection devices.

A list of semi-structured interview questions was sent to the interviewees at least two days prior to the interview. The time and location of the interviews were arranged to the interviewees' convenience. The interview was audio-recorded and transcribed afterwards. The duration of interviews typically lasted about 45 to 60 minutes.

For coding the interview transcripts, first, initially collected interview transcripts were reviewed with open coding applied to instances in text that closely related to research aims and questions: (1) to understand the actual meaning of corporate emissions reductions target; (2) investigate what corporate managers are willing to do and what they are not willing to do in setting and reporting emissions targets?

Second, after all the extracts are coded, key themes were identified. These themes consist of (1) reasons why climate change is important to business; (2) reasons why emissions reduction target is important to business; (3) effective target setting; (4) how to set their emissions reduction target; (5) effective target setting; (6) offsetting; (7) reporting/transparency; (8) managing emissions-challenges and solutions; (9) Zero Carbon Act and (10) Carbon Neutral.

For example, one of the themes that emerged was why climate change mitigation is important to businesses. Stakeholder's pressures, compliance, business case, engagement of board, leadership, and the right thing to do are used to articulate the reasons why climate change mitigation is important.

Table 23: Some Extracts and Codings from Fieldwork Study

Company	Code	Extracts
Contact Energy	**Stakeholder's Pressure**	**Our stakeholders, our shareholders in particular they care about how we perform in a wide range of environmental impact and social impacts, not just only financial performance.** They are interested in seeing risks and opportunities, of course, how we manage our climate-related risks which is very important for them so it is one of the key things that drive us to report it externally. And we start to report our scope 2 and scope 3 emissions because our stakeholders want to see that information. That stakeholder will have a boarder view of the performance of the business.
Goodman	**Compliance**	Goodman Group has been measuring its GHG emissions since 2011. **Compliance drivers such as the NGER regulations and mandatory disclosure obligations** establish minimum obligations for energy and carbon measurement, however, these have become useful tools for tracking the energy efficiency of our buildings and operations.
NZ Post	**Business Case**	It **is about saving money because when we are reducing emissions, we are reducing our fuel costs in the whole and that saves of money.**
Z Energy	**Engagement of Leadership**	I think the company has the general feeling that within the company, particularly from **CEO**, (the name of the CEO) **whose thought covered strongly to sustainable business and sustainability related people** that he felt that one of the company's particular roles set to be New Zealand was to address and help people remove/ lower use of fossil fuel over time.
Tourism Holdings	**Responsibility/Right thing to do**	Because through emissions that we create, **we have a negative impact on the world** that we are operating in, and the way that we sell as well, especially on what we sell through emissions that we produce, again, our large part we include our customers. **We are deteriorating the same world. So we know that we need to reduce them**.

Throughout analysis and write-up, themes were subject to ongoing evaluation to ensure they were internally consistent, conceptually related, and analytically useful. There was a possibility for misinterpretation of data. My own interpretation can heavily influence how data were grouped.

5.4. Conclusion

In this chapter, I detailed the methods used to undertake the analysis of a set of texts in the corporate public reports related to climate change as well as an archive of opinions and insights from interviews. I have included a discussion of how content analysis, discourse analysis and field-work study were conducted to study a phenomenon of corporate climate change target setting and reporting. These data and results serve to get deeper insights and understanding of the managerial perceptions that influence climate change practices and responses, notably, target setting and reporting.

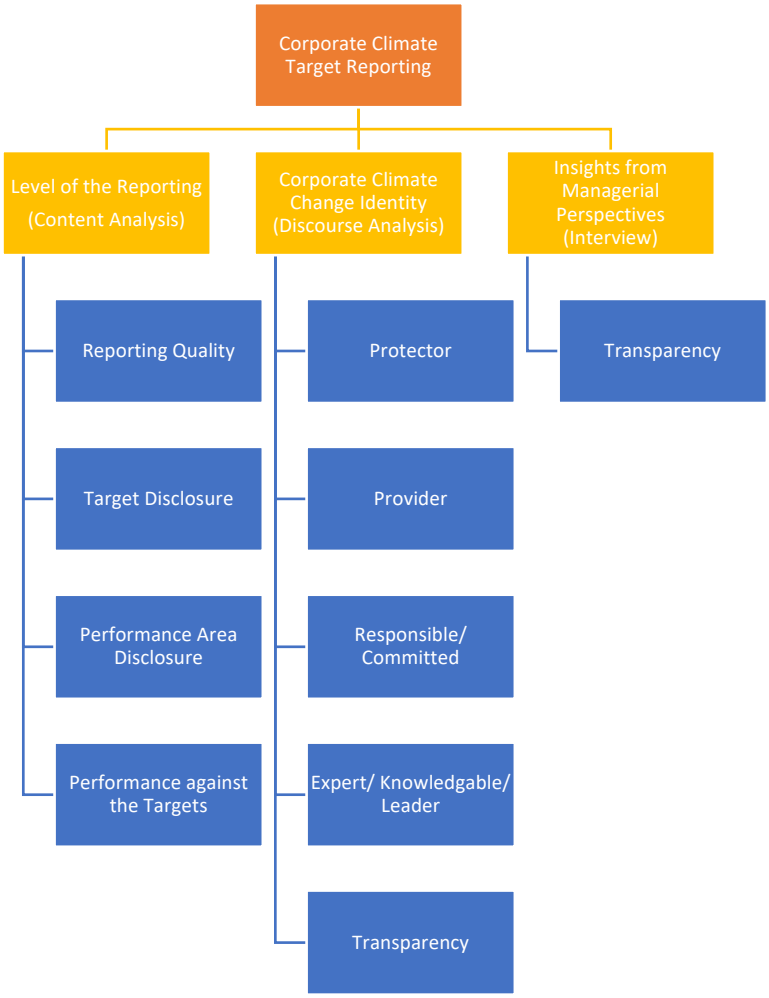
CHAPTER 6 – CORPORATE CLIMATE CHANGE MITIGATION DISCLOSURE AND CLIMATE TARGET REPORTING

6.1. Introduction

This chapter explores how well the top 50 NZX listed companies are disclosing their corporate climate change-related information and climate change targets. It draws upon the documentary analysis of publicly available information on 50 corporate websites, from 250 annual reports and 52 CSR reports and was undertaken between June 2017 and September 2018. Twenty nine interviews with representatives from 23 organisations (14 climate reporters in the sample, four non-reporters in the sample and five companies with science-based targets or stated commitment to achieving climate change targets (not in my sample) also form part of the analysis

This chapter consists of three main sections. Section 6.2 explores the level of corporate climate-related reporting. In particular, it discusses the quality of climate reporting, corporate climate change targets, target performance area disclosure and climate performance against targets. These findings were obtained from the content analysis data collection stage. Section 6.3 examines a number of ways that organisations are represented and constituted in relation to climate change mitigation by adopting a discourse analysis method. In addition to identifying their reporting strategies, Section 6.4 explores the deeper insights gained into corporate motivations for reporting by undertaking interviews with corporate representatives. The chapter finishes by summarising the main points in Section 6.5. The outline for this chapter is graphically presented in Figure 21 below.

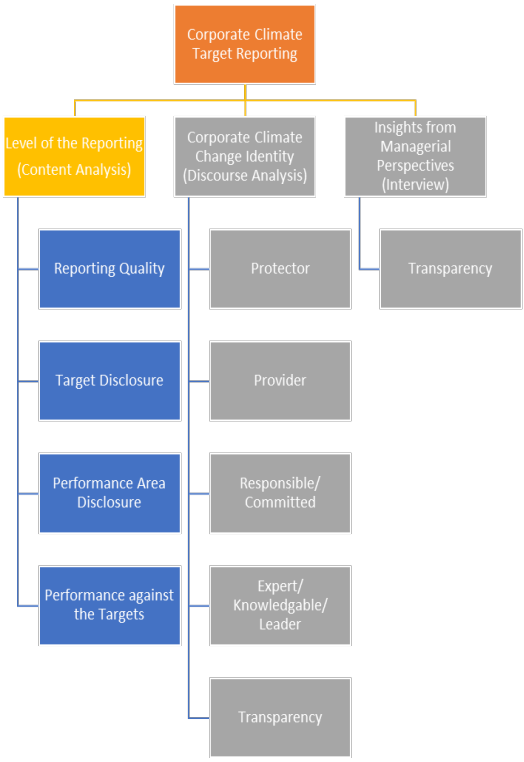
Figure 21: Climate Change Target Reporting Quality and Corporate Identity



6.2. Level of Corporate Climate-Related Reporting – Evidence From Content Analysis

The colouring of Figure 22 indicates the topics to be presented and discussed in this section.

Figure 22: Level of Corporate Climate Change Reporting



6.2.1. Quality of climate change reporting

Most corporate climate change-related information is made publicly available on websites and corporate reports are disclosed voluntarily. Unsurprisingly, there is considerable variation in the type, volume and detail with which companies publicly report on climate change. Some companies might present their climate information in a dedicated section of their corporate reports while other companies might devote just a sentence to acknowledge their awareness of climate change.

In order to make sense of this variety, their GHG emissions reporting level and quality are assessed in accordance with a voluntary standard. The Global Reporting Initiative

(GRI) G4 is the most commonly used standard among the largest global companies (KPMG 2017). This study focuses only on the aspect of Emissions and covers seven indicators on greenhouse gas emissions as well as ozone-depleting substances, NOx, SOx and other significant air emissions (EN 15 to EN21). It is useful to note that since the indicators are written in a general way, implementation of the activities necessary for measuring and reporting these indicators are considered too difficult for many companies (Daub 2007). In addition, GRI standards do not require the company to fulfil or handle all topics of climate change. Companies are therefore free to use the standards in any way they choose.

Table 24: GRI G4 – Emissions Indicators

Order	Indicator	Emissions
1	EN 15	Direct GHG emissions (Scope 1)
2	EN 16	Energy indirect GHG emissions (Scope 2)
3	EN 17	Other indirect GHG emissions (Scope 3)
4	EN 18	GHG emissions intensity
5	EN 19	Reduction of GHG emissions
6	EN 20	Emissions of ozone-depleting substances
7	EN 21	NO_x, SO_x and other significant emissions

Source: GRI G4 Reporting Principles and Standard Disclosures (2015)

For coding emission disclosure, seven indicators (EN15 to EN21) are scored on a scale of zero to three. This rating scale is based on Daub's study (2007) on assessing the quality of sustainability disclosure.

Table 25: Rating scale of Sustainability Disclosure

0	1	2	3
No meaningful information is provided on the specific criterion	Partly information is provided	Reporting provides good information on the criterion. However one criterion is not addressed	The reporting includes full information to the criterion

Source: Daub (2007, p. 83)

A rating of three means that companies have provided a comprehensive and complete set of the information suggested by GRI G4 which includes not only measurement of each indicator in metric tons of CO_2 equivalent, but also the rationale for choosing the base year, emissions in the base year, reporting standards, methods and assumptions used, source of the emission factors used and the global warming potential rates used. New Zealand-based companies in the sample have not achieved a maximum score of three in any emissions indicator. Table 26 provides examples of what such emissions indicators and quality scores look like:

Table 26: Examples of Emissions Indicators and Quality Score

Indicators	Rating	Example of corporate disclosure
EN15- Scope 1 emissions	1	The Warehouse-owned Vehicles and Lifts (Scope1 emissions: 1,050 tonnes CO_2-e in 2013 as compared to 1,069 tonnes CO_2-e; a reduction of 1.7%) (Warehouse AR2013, p. 31)
EN 16- Scope 2 Emissions	2	Details of our total carbon footprint are summarised below (a table of CO_2-e was provided). The base year was set as 2010 as this was the first year the Group reported greenhouse gas emissions. This year our carbon footprint was 331,817 tonnes. Greenhouse Gas Protocol standard, a methodology recognised in DEFRA's (British government Department responsible for Environment, Food and Rural Affairs) Environmental Reporting Guidelines 2012. We have used the operational control approach where the Group has the authority to introduce and implement its operating policies at the operational level. Franchise hotels and investment hotels that are managed by third-party operators have not been included in the data collation. Excluding business travel which has been reported for the first time this year, carbon emissions have remained relatively constant whilst the intensity measure has shown a steady decline. This is due to the investment by the Group in more energy-efficient process equipment in our operations and attention to environmental standards in the development or refurbishment of our hotels. (Millennium & Copthorne Hotels AR2013, p. 23)
EN 17- Scope 3 Emissions	1	Scope 3 (Tax, car hire, air travel, landfill waste): 247 tonnes CO_2-e in 2013, 41% of total emissions reported; and 311 tonnes CO_2-e in 2014, 42% of total emissions reported (Trade Me, AR2015, p. 39)
EN 18- GHG emissions intensity	2	Spark has significantly reduced carbon intensity since FY06. As a result of the emission reductions since the base year, carbon intensity measures demonstrate excellence in carbon performance. Direct emissions per customer connection have reduced by 10% in FY15 and by 70 since FY06, while direct emissions per million dollars of revenue have reduced by 10% in FY15 and by 60% since the base year. In FY15, direct emissions dropped to a record low of 445 grams- CO_2e per customer connection. Indirect emissions per connection improved slightly by 0.3% in FY15 and overall have reduced by 49% since the base year. The following two graphs show the long-term downward trend in these indicators (Spark SR2015, p. 11)
EN 19- Reduction of GHG emissions	2	In 2012, we set ourselves the ambitious target of reducing energy use by 20 per cent per passenger by 2020. Despite a large increase in passenger numbers, we have steadily reduced overall consumption and met our target well before this date. Reducing electricity used in our international terminal saved almost 200 tonnes of carbon in the 2016 financial year. The amount of carbon generated per passenger decreased by 3 per cent to 0.44 kilograms. (Auckland International Airport SR2016, p. 33).
EN 20- Emissions of ozone-depleting substances	-	-
EN 21- NOx, SOx and other significant emissions	1	In 2012 we used more asphalt and fuel in our refining processes. The increased level of sulphur in these two fuels meant our sulphur dioxide emissions were higher than in 2011 (Refining AR2012, p. 20)

For each year, each company might have a maximum score of 21 points, corresponding to a full score on seven indicators. For five years, the maximum score would be 105 points (three points x seven indicators x five years). Finally, the total of all individual criterion scores is summed up to calculate a final score for disclosing assessment.

Only 19 out of 50 companies disclosed climate-related information over a period of five years from 2012 to 2016. This means that these 19 companies have at least one score for disclosing a minimum of at least one emissions indicator. Upon completion of all assessments, the list of these companies is shown as follows:

Table 27: Quality of Corporate Climate Change Reporting by Company

Company	2012	2013	2014	2015	2016	Total
Air New Zealand	0	0	0	6	6	12
Auckland International Airport	0	0	0	0	11	11
Chorus	0	1	0	0	1	2
Contact Energy	0	2	2	4	2	10
Fisher and Paykel Healthcare Corp	1	1	1	1	1	5
Fletcher Building	4	4	4	4	4	20
Goodman Property	0	0	1	1	1	3
Kathmandu Holdings	1	1	4	4	2	12
Kiwi Property Group	0	0	0	0	2	2
MainFreight	1	1	1	1	2	6
Millennium and Copthorne Hotels	2	9	9	9	10	39
New Zealand Refining Co	2	0	0	0	0	2
PGG Wrightson	3	1	1	1	2	8
Precinct Property	0	0	0	0	1	1
Sanford Ltd/ NZ	3	5	6	4	4	22
Sky City Entertainment Group	0	0	0	0	1	1
Spark New Zealand	3	2	5	8	5	23
Trade Me Group	0	0	3	3	0	6
Warehouse Group	0	4	4	1	5	14
Total	***20***	***31***	***41***	***47***	***59***	***199***

In fact, the number of companies that published climate-related information increased from nine companies in 2012 to 19 in 2016. The increasing trend in the number of companies might indicate growing awareness and recognition of the materiality of climate change issues. Several of those climate change reporters (such as Air New Zealand, Spark, the Warehouse Group) are the founding signatories of the NZ Climate Leaders Coalition and that was established in 2018 to promote business leadership and collective action on climate change. The increase in the number of reporters might also be driven by stakeholder pressure on companies to address and manage climate-related risks and opportunities. New Zealand perhaps follows the global trend to consider the physical and financial impacts of climate change, even though there might not be the same level of stakeholder pressure in New Zealand as compared with overseas.

Table 28: Summary Table of the Quality of Corporate Climate Change Reporting by Score Rank

Score	Number of Companies	Name of Companies
1-9	10	Chorus Ltd Fisher and Paykel Healthcare Corp Ltd Goodman Property trust Kiwi Property Group Ltd Main freight Ltd New Zealand Refining Co Ltd PGG Wrightson Ltd Precinct Property SkyCity Entertainment Trade Me Group Ltd
10-19	5	Air New Zealand Ltd Auckland International Airport Ltd Contact Energy Ltd Kathmandu Holdings Ltd Warehouse
20-29	3	Fletcher Building Ltd Sanford Ltd/ NZ Spark New Zealand Ltd
30-39	1	Millennium and Copthorne Hotels
Over 40	0	None

Millennium Hotels (39 points) led the way in this investigation, followed by Spark (23 points), Stanford (22 points) and Fletcher Buildings (20 points).

The overall low disclosure scores for the rest, however, indicate the lack of credibility and transparency in the corporate disclosure of their contribution to climate change mitigation. Remember, too, that 31 organisations disclosed nothing for five consecutive years. The results, however, it must also be remembered do not necessarily provide evidence of the companies' actual GHG emissions performance, rather the lack of diclosure.

6.2.2. Sector variations

Having identified the level of climate-related disclosure, it is necessary to explore whether climate disclosure varies by industry sector. The observations of the level of disclosure for each sector have occurred with a small sample (50).

Table 29: Level of Disclosure for Each Sector

Industry	Percentage of companies per level of disclosure for each sector					
	No disclosure	**1-9 scores**	**10-19 scores**	**20-29 scores**	**30-39 scores**	**Over 40 scores**
Technology (n=1)	100% (n=1)	-	-	-	-	0
Consumer Staples (n = 6)	50% (n=3)	17% (n=1)	17% (n=1)	17% (n=1)	-	0
Consumer Discretionary (n = 8)	56% (n=5)	11% (n=1)	22% (n=2)	-	11% (n=1)	0
Financials (n =11)	75% (n=9)	25% (n=3)	-	-	-	0
Industrials (n =4)	50% (n=2)	25% (n=1)	25% (n=1)	-	-	0
Communications (n =5)	40% (n=2)	40% (n=2)	-	20% (n=1)	-	0
Healthcare (n = 7)	86% (n=6)	14% (n=1)	-	-	-	0
Materials (n = 2)	50% (n=1)	-	-	50% (n=1)	-	0
Utilities (n =3)	67% (n=2)	-	33% (n=1)	-	-	0
Energy (n =1)	-	100% (n=1)	-	-	-	0
Total (n =50)	62% (n=31)	20% (n=10)	10% (n=5)	6% (n=3)	2% (n=1)	0% (n=0)

n = number of companies

Non-disclosing companies are the majority in the sample (62%), spread across nine industry sectors, excuding energy. This suggests most sectors lack climate reporting, which is perhaps due to a lower priority in a company's business strategy or is not demanded by stakeholders. Companies in the Technology, Healthcare and Financials sectors report climate information the least. These sectors do not have substaintial obligations to the NZ ETS nor other reporting regulations and are considered to be less environmentally sensitive.

Table 30: A List of Climate Change Non-disclosing Companies

No Disclosure	A2 Milk, Abano Healthcare, Argosy Property, Briscoe Group, CDL Investments, Colonial Motor Company, Comvita, Delegat Group, EBOS Group, Fonterra Shareholders Fund, Green Cross Health, Heartland Bank, Hellaby Holdings, Infratil Ltd, NZX, Pacific Edge, Port of Tauranga, Property for Industry, Restaurant Brands, Ryman Healthcare, Skellerup Holdings, Sky Network Television, Steel and Tube Holdings, Summerset Group Holdings, T&G Global, Tourism Holdings, Turners Automotive Group, Vector, Vital Healthcare Property Trust and Xero.

The two sectors of Communications and Industrial and Energy have the highest consistency in climate reporting with at least 40% of their companies scoring up to nine. Greater disclosure (scores 10 to 19) in climate reporting occurs for Utilities, Industrial and Consumer Discretionary which is likely due to their environmental impacts. Both the Consumer Staples (consumer products) and Materials (construction material manufacturing) sectors are the most engaged with climate change reporting. Companies in this group are consumer-facing, therefore, legitimacy-enhancing strategies are more likely to be emphasised.

6.2.3. Distribution of disclosure by type of climate information (emissions indicator)

This section examines the distribution of disclosure by emissions indicator from the disclosure levels provided by a range of different companies and sectors. Further insights into New Zealand's climate-related disclosure practices can be gained by examining the most and least disclosed indicators of the GRI G4 Standards. The findings for emissions disclosure quality by indicator (EN15 to EN 21) are presented in Figure 23 below:

Figure 23: Emission Disclosure Quality by Indicator (EN15-EN21)

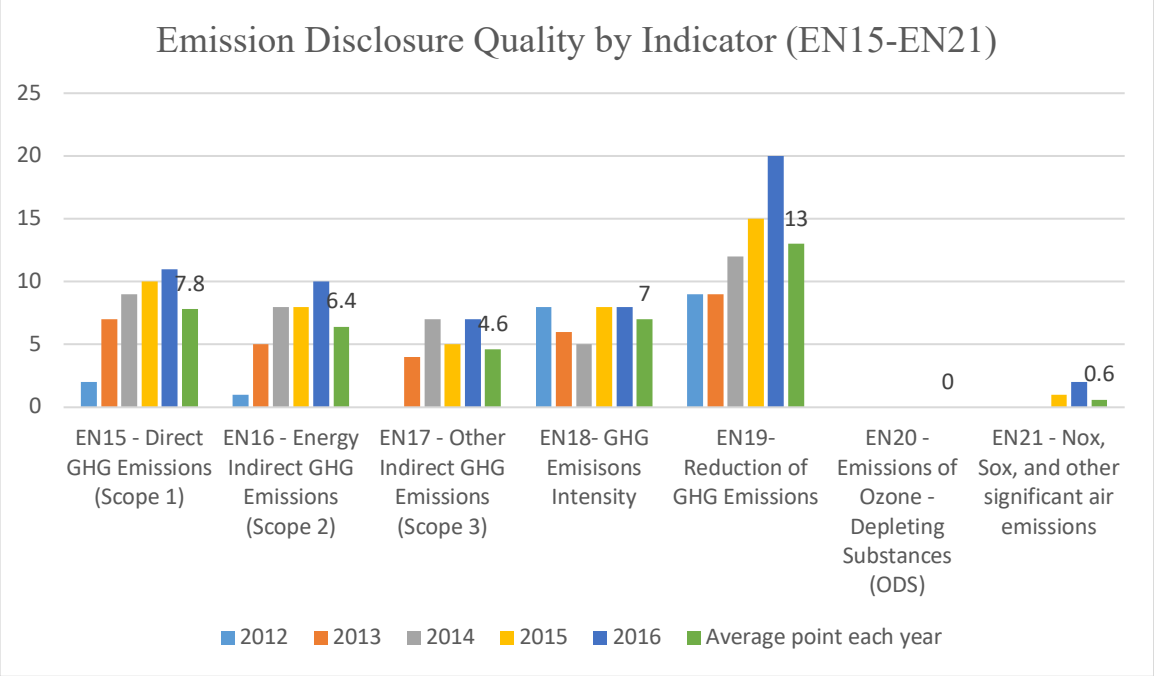


Table 31 below presents the results of compiling the emissions indicator data, providing an idea of how well the company reports on climate change issues according to each criterion. The annual maximum for each indicator is 57 points (19 reporting companies x three points maximum). There is no disclosure of EN20-Emissions of Ozone-Depleting Substances. EN 19-Reduction of GHG emissions is the most disclosed indicator with an annual average of 13.2, while EN21-NOx and SOx and other significant air emissions is the least disclosed indicator with the average of 0.6. EN15-Scope 1 Emissions has an annual average 7.8, followed by EN 16-Scope 2 Emissions (Energy indirect GHG

emissions) and EN 18 GHG Emissions Intensity which have annual averages of 7.2 and 6.4, respectively. EN17-Scope 3 Emissions (other indirect GHG emissions from value-chain supplies) have the second lowest level of disclosure with an annual average of 4.6. Again, the level of disclosure does not necessarily indicate anything about how the company in fact behaves and performs, but again, these low scores (from a total of 57) are indicative of very poor disclosure among those 19 organisations that disclose.

Table 31: The Average Score of Each Emissions Indicator by Year

Year	EN15	EN16	EN17	EN18	EN19	EN20	EN21
2012	2	1	0	8	9	0	0
2013	7	5	4	6	9	0	0
2014	9	8	7	5	13	0	0
2015	10	8	5	8	14	0	1
2016	11	10	9	9	21	0	2
Total	39	32	23	36	66	0	3
Average points per year	**7.8**	**6.4**	**4.6**	**7.2**	**13.2**	**0**	**0.6**

Presented as Table 32 below, analysis by company shows that most of the companies provided "no meaningful information" or "patchy information" on the majority of the criteria. None of the companies show best practice by reporting full information to the criterion indicated by achieving the maximum score. However, Millennium Hotels provides an example of better climate reporting quality, this over the rest of the companies in the sample. This is even though they seem to have lower carbon emissions and environmental impact as compared to other companies in high environmental impact sectors such as NZ Refining, Fletcher Building, and Contact Energy. The hotel group, which is headquartered in the United Kingdom, perhaps confronts greater institutional pressures in shaping their GHG reporting as the United Kingdom is viewed as a leader in sustainability and climate change practices (International Chamber of Commerce, 2019). Their carbon measurements, which follows GHG Protocol Corporate Accounting

and Reporting Standard methodology, are externally verified by an independent third party. The adoptation of internationally standardised climate change reporting practices for an exteneded period might exceed New Zealand's practices as well as its domestic regulatory requirements.

Table 32: Score of Each Emissions Indicator by Company

	Company	EN15	EN16	EN17	EN18	EN19	EN20	EN21	TOTAL
1	Air New Zealand Ltd	4	4	0	2	2	0	0	12
2	Auckland International Airport Ltd	2	2	2	2	1	0	2	11
3	Chorus Ltd	0	0	0	0	2	0	0	2
4	Contact Energy Ltd	6	0	0	0	4	0	0	10
5	Fisher and Paykel Healthcare Corp Ltd	0	0	0	0	5	0	0	5
6	Fletcher Building Ltd	5	0	0	5	10	0	0	20
7	Goodman Property trust	0	0	0	0	3	0	0	3
8	Kathmandu Holdings Ltd	0	5	0	3	4	0	0	12
9	Kiwi Property Group Ltd	0	0	0	0	2	0	0	2
10	Main freight Ltd	0	0	0	0	6	0	0	6
11	Millennium and Copthorne Hotels	8	8	8	9	6	0	0	39
12	New Zealand Refining Co Ltd	1	0	0	1	0	0	0	2
13	PGG Wrightson Ltd	0	0	0	2	6	0	0	8
14	Precinct Property	0	0	0	1	0	0	0	1
15	Sanford Ltd/ NZ	5	5	5	5	2	0	0	22
16	Sky City	0	0	0	0	1	0	0	1
17	Spark New Zealand Ltd	3	3	3	3	10	0	1	23
18	Trade Me Group Ltd	2	2	2	0	0	0	0	6
19	Warehouse Group Ltd	3	3	3	3	2	0	0	14
	Total	**39**	**32**	**23**	**36**	**66**	**0**	**3**	**199**

The indicator EN15-Scope 1 emissions was the best disclosed by four companies (Millennium Hotels; Contact Energy, Sanford, and Fletcher Building). Millennium Hotels provides some better example relative to other by receiving score 2 "good information on the criterion but one relevant area is not addressed" for the period 2013 to 2016. For example:

> Details of our total carbon footprint for the period 1 October 2015 to 30 September 2016 is summarised in the table below. The base year was set as 2010 which was the first year the Group reported greenhouse gas emissions. For this reporting period, our carbon footprint was 362,071 tonnes. Our Scope 1,2 and 3 emissions, as well as the underlying energy, refrigerant, waste, water and travel data, have been externally verified by an independent third party, Carbon Credentials, in accordance with ISO 14064-3. To calculate our emissions, we have followed the GHG Protocol Corporate Accounting and Reporting Standard methodology and the operational control approach to determine what properties are included within the boundary. Franchise hotels and investment hotels that are managed by third-party operators have been included in the data collation. In the reporting period, absolute emissions have decreased by 3% despite the opening of several new hotels… Building on the success of reducing our carbon footprint since 2010, we have set a target to reduce our absolute Scope 1 and 2 operational carbon emissions from energy use and refrigerant losses by 10% by 2020, based on a 2015 baseline year (Millennium & Copthorne Hotels plc AR2016, p. 23).

The EN16 indicator is focussed on disclosure of the Scope 2 Emissions-Energy Indirect GHG Emissions. Millenium, Kathmandu and Sanford achieved the highest score in disclosing scope 2 Emissions, while Chorus, Contact Energy, Fletcher Building, Goodman, Kiwi Property, Mainfreight, New Zealand Refining and PGG Wrightson do not provide any disclosure on the indicator.

Reporting for EN17, which covers the other indirect emissions (from supply chains), is very patchy as compared to the disclosure of direct emissions and energy indirection emissions. For example "Since 2007, Trade Me has collected its travel and energy emissions data, and with an external consultancy calculated its greenhouse gas emissions" (Trade Me Group AR2014, p. 39). Again, Millennium Hotels provides the best practice in this indicator. For example, in their AR for 2015, it is stated that

> Scope 3 emissions-other indirect emissions that are a consequence of our activities which occur at sources which we do not own or control and which are not classed as scope 2 emissions. Our global tonnes of scope 3 emissions equivalent: 31,808 (2015), 27,323 (2014) and 24,658 (2013). In order to affirm our commitment to sourcing responsibly, we continually develop unique opportunities for sustainable sourcing in each aspect of our daily operations with a specific focus on food and beverage ingredients. Our focus includes reducing food miles and using suppliers with a demonstratable commitment to sustainable production methods. For example, our UK main food supplier has introduced best practices and investment programmes with goals to reduce CO2 emissions, minimise energy consumption and waste to landfill (p. 28).

Disclosure of EN18 GHG Emissions Intensity was poorly covered. For example, "Reduce CO2 intensity (kgCO2/t of product): 2011 actual (228), 2012 target (<237), 2012 actual (223)" was reported by Refining NZ (Refining NZ AR 2012, p. 5). Chorus, Contact Energy, Fisher and Paykel, Goodman, Kiwi Property, Mainfreight, and Trade Me failed to provide any information on this indicator while Millennium Hotels again is a leader in disclosing this indicator.

EN19 Reduction of GHG Emissions is the best-disclosed indicator overall, with two companies (Spark and Fletcher Buildings) providing at least good information every year in a period from 2012 to 2016. Both provide examples of best practice by scoring into category 2. For example, Spark (SR2016, p. 6-7) has a whole section that is two pages in length reporting the amount of GHG emissions reductions achieved as a direct result of initiatives to reduce emissions in detail. They provide figures in metric tonnes of CO_2 equivalent, and report the reduction in GHG emissions occurred in Scope 1, Scope 2 or Scope 3 emissions. It has not, however, disclosed the rationale for choosing a base year or baseline. The reminder of company reporting typically provides the minimum level of disclosure, which is very patchy. None of the companies sampled disclosed information on the indicator of EN20 Emissions of Ozone-Depleting Substances (ODS).

EN21 covers the disclosure on Nitrous oxide, Sulfur oxide, and other significant air emissions and is the lowest scoring indicator of five (excluding EN20 which has no score). While Auckland International Airport's score is higher than the others, it would be difficult to identify their disclosure in this criterion as best practices. Auckland International Airport's SR 2016 states:

> We recorded and acted on all spills across the airport precinct. Increasing airline operations saw the number of spills rise slightly, from 95 in the 2015 financial year to 106 in 2016. The number of significant spills (over 2m2) per 1,000 aircraft movements fell from 0.19 to 0.11 over the same period. Our Airport Emergency Services team is trained and equipped to deal with spills, whether they are oil, effluent or other hazardous substances (p. 30).

6.2.4. Emissions reduction target disclosure

Having identified the level of disclosure and type of climate information disclosed, this section more specifically explores corporate emissions reduction targeting. More particularly, a variety of target disclosure practices in terms of science-based targets, carbon target performance area (e.g., GHG reduction, fuel energy, offsetting) and performance against these targets are examined.

6.2.4.1 Classification of targets reporting by types of targets

There are three different types of targets: science-based targets, science-referencing targets and non-science targets, displayed as Table 33 below. Science-based targets are those in line with the level of decarbonisation required to keep global temperature increase below 2^{o}C (IPCC AR5). The science-referencing target is set with an explicit commitment to considering ecological consequences of the corporate impact on the global process of climate change or targets with a *qualitative* connection to the planetary boundary framework. Targets without any connection to the planetary boundary framework are referred to as non-planetary boundary (i.e. non-science) targets.

Table 33: Example of Climate Change Target Types

Category	Example
Science-Based Target (approved by the Science Based Targets Initiative-SBTi)	• Reduce absolute Scope 1 and 2 GHG emissions 30% by 2030 from a 2018 base year. Contact Energy has also committed to reducing Scope 3 GHG emissions from use of sold products 15% by 2030 from a 2018 base year (Contact Energy, AR2019, p. 34) • Reduce absolute Scope 1 and 2 GHG emissions 30% by 2030 from a 2018 base year. Fletcher Building Limited also commits that 67% of its suppliers by emissions will have science-based targets by 2024 (SBTi 2020).
Science-Referencing Target	• "Science-based target" of a reduction (on FY15) of 10% by 2020 and 32% by 2030" (Warehouse Group AR2016, p. 50) • A 20% reduction on our 2012 carbon emissions by 2020 (Kathmandu SR2015) • To reduce overall group carbon emission intensity by 10% from 2012 to 2020 (Fletcher Building SR2012)
Non-Science Target	• Environmental Footprint Index less than or equal 100 (NZ Refining AR2013, p. 20)

This study identified a total number of 61 carbon targets from annual reports and sustainability reports for a time period of the five years from 2012 to 2016. Presented in Table 34 below, this analysis documents that the number of companies in the sample disclosing targets has increased from five companies in 2012 to 13 companies in 2016. Of the 19 climate reporters, 13 set and publicly disclosed targets. This seems to be of significance, indicating the importance of setting targets amongst those climate reporters. In other words, it is likely that companies reporting climate change information might also set and report targets. These are of great importance because without setting targets, companies have nothing to measure and report their carbon performance against. The study also found that there is an upward trend in the number of targets disclosed by each organisation over a period from 2012 to 2016. Some companies might disclose more than one climate-related target (for example, Scope 1, 2, 3 targets and/or intensity targets, etc).

Table 34: The Carbon Target Disclosure by Target Types each year

Year	Companies setting GHG Targets		Number of Science-based Targets		Number of Science-referencing Targets		Number of Non-Science Targets	
	No. of Companies	% of Companies	No of Targets	% of Targets	No of Targets	% of Targets	No of Targets	% of Targets
2012	5	10%	0	0%	2	40%	3	60%
2013	5	10%	0	0%	6	75%	2	25%
2014	5	10%	0	0%	12	92%	1	8%
2015	7	14%	0	0%	13	93%	1	7%
2016	13	26%	0	0%	20	95%	1	5%

None of the 61 targets is considered a science-based target. This means that none of these targets exhibited a quantitative connect to the planetary boundaries framework. The number of science-referencing targets increased from two targets in 2012 to 20 targets in 2016 while the number of non-science based targets drop from three in 2012 to one target in 2016. Those companies which set science-referencing targets have referenced climate change in their report, particularly by taking climate change considerations into their strategic decision making.

6.2.4.2 Classification of targets reporting by carbon target performance area

The majority of companies did not report any target (74% of 50 companies in the sample in 2016). Table 35 shows the area and the overall target frequencies for each of five performance area categories in which corporate targets have been set. Those targets mainly focus on two categories, "GHG Reduction" and "Fuel Efficiency", which account for 87% and 13% of total carbon target statements, respectively.

Table 35: Carbon Target Performance Area

Year	Reduction GHG	Green Commuting	Reporting	Fuel Efficiency	Carbon Offset
2012	4	0	0	1	0
2013	7	0	0	1	0
2014	12	0	0	1	0
2015	12	0	0	2	0
2016	18	0	0	3	0
Total	53	0	0	8	0
%	**86.9%**	**0%**	**0%**	**13.1%**	**0%**

6.2.4.3 Reporting emissions performance against these targets

For the purpose of this study, which is to understand the managerial motivation behind corporate environmental target setting and reporting, there are four categories of reporting environmental performance against these targets as follows:

Table 36: Categories of Reporting Environmental Performance Against Targets with Examples

Category	Definition	Examples
1	Target met and disclosed	Target: reduce carbon emissions by 1.5% which represents a 30t CO_2e reduction Performance disclosed: Since 2012 we have has reduced the group's Carbon Footprint by 15% or 1,143 tonnes of CO_2e (Kiwi Property SR2016, p. 7-8)
2	Target not met and disclosed	Target: Environmental Footprint Index ≤ 100 Performance disclosed: While CO_2 emissions increased with our record crude throughput greater efficiencies in our processing saw the ratio of CO_2 feedstock reduce (Refining AR2012, p. 20)
3	No disclosure (not known whether target met or not met)	-
4	Replacement/ New Target	2012 target: Emissions Eco-Efficiency (kg/kg product):0.73 2016 new target: Reduce our carbon emissions to 30% below 2005 levels by 2030 (Sanford, AR2016, p. 114)

Source: Slack & Jones (2010)

As displayed in Table 37 below, the most popular category of performance against the carbon target is when they had met its target. This occurred in 32 out of 61 cases and thus it accounts for nearly 53% of all performance disclosed by all of the companies. The total proportion of cases in the categories of no disclosure of targets and changed target (indicating replacement or introduction of new softer targets) and accounts for 20% and 18%, respectively. There is a smaller number of cases where companies disclosed a target that they had not met (accounting for only 10% of total cases disclosed). This shows that companies are more likely to report positive information on environmental targets met, arguably in an attempt to manage stakeholder impressions of their corporate environmental performance. This is likely because their image among customers and wider stakeholders significantly influences their business operations.

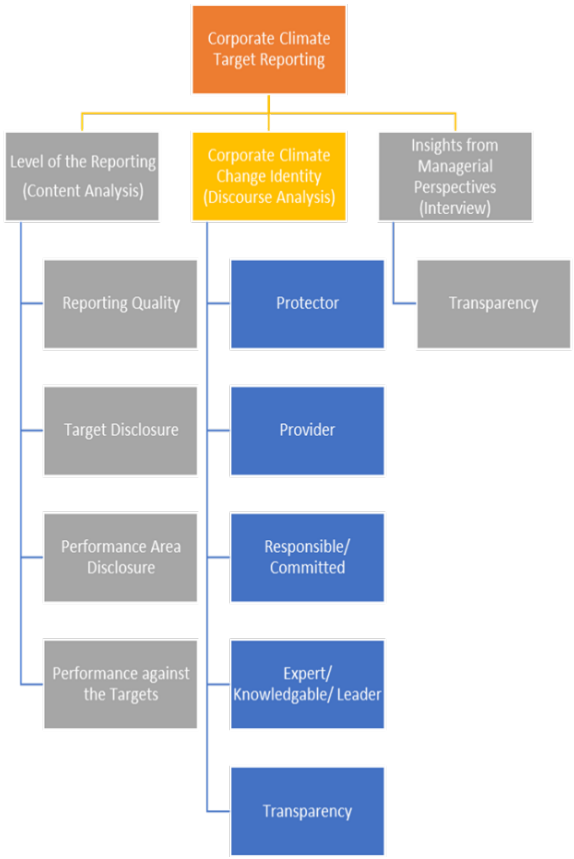
Table 37: Performance Against Targets Reporting

Year	Met and Disclosed	Not met and Disclosed	No Disclosure	Change Target
2012	0	2	3	0
2013	1	1	3	3
2014	4	1	5	3
2015	12	1	1	0
2016	15	1	0	5
Total	32	6	12	11
%	**52.5%**	**9.84%**	**19.67%**	**17.99%**

6.3. Corporate Climate Change Identities (Discourse Analysis)

The blue colouring of Figure 24 outlines this section's presentation of the corporate identities subtypes with regard to climate change mitigation.

Figure 24: Corporate Climate Change Identities



The low level of corporate climate reporting identified in the previous section might indicate that companies are in the process of learning to navigate themselves in their climate change discourses in order to gain acceptance and create competitive advantage. My second research question is to explore corporate identities adopted in mitigating climate change within the corporate public reports by the 19 climate reporters. It is of great importance to understand who organisations claim to be before undertaking the analysis and assessment of what these companies are actually doing (to mitigate climate change and set emissions reduction targets) and what they say they are, the subjects of Chapters 7 and 8 to follow.

Organisational identity creates an awareness of what the businesses are in relation to how they perceive other businesses and how the businesses believe others perceive them. They might imitate other organisations (or show themselves as being worth imitating) or might differentiate themselves from other organisations. By establishing their identities, companies want to communicate with their stakeholders who put pressure on companies to change their behaviour and practices, and therefore maintain their legitimacy.

Corporate identity with regard to climate change mitigation was represented in a number of ways. In this section, five themes are examined to see how they are constituted in the texts. There themes have been labelled protector, provider, responsible/committed, expert/knowledgable/leader and transparent. There is an upward trend in the number of organisations that articulate some kind of identity with climate change in 2016 as compared to 2012. This might indicate that climate change has become more important on the agenda politically and societally, and organisations need to be seen to be responding. Therefore, climate change issues are likely to have been tacked on by companies in their reports. However, no predominant themes emerged across the sampled organisations within the study period. Corporate identity claims are quite patchy and uneven, which might indicate that institutional pressures over this study period are weak. These themes and the frequencies of their appearance in the data are presented in Table 38.

Table 38: Corporate Climate Change Identity by Number of Organisations

Themes	2012		2013		2014		2015		2016		TOTAL	
	CC	S	CC	S	CC	S	CC	S	CC	S	CC	S
PROTECTOR	0	2	0	5	0	4	0	5	1	8	**1**	24
PROVIDER	1	5	0	6	3	5	4	9	4	7	**12**	32
RESPECT	0	0	0	1	0	0	0	2	0	1	**0**	4
RESPONSIBLE/ COMMITTED	5	5	3	2	3	2	0	2	4	7	**15**	18
EXPERT/ KNOWLEDGEABLE/ LEADER	0	2	0	3	2	5	4	3	2	8	**8**	21
TRANSPARENCY	1	1	2	0	4	0	4	0	4	1	**15**	2

CC: Climate Change/ **S:** Sustainable Development

The protection theme seems to be more strongly associated with corporate report references and utterances to sustainable development than with climate change. In contrast, references to transparency appears to be much more stronger associated with climate change than sustainable development. This might indicate that companies feel it difficult to articulate their protection identity with regard to climate change while it is much easier to claim to be transparent about their climate change impact.

Even though it is imperative that companies take action in the mitigation of global warming, climate change is a truly global and complex problem with economic, social, political and moral consequences. The impact of climate change has become a worldwide threat. The effects of climate change on companies' operations are becoming increasingly tangible and more obvious. However, reducing carbon emissions and making a climate action plan is only a part of the solution. Being a protector, companies need to make a significant reduction in GHG emissions soon, an action which might place them at a competitive disadvantage, as those decisions need to be bold and are often costly. Some substantial emissions cuts in GHG emissions must await technological advances.

In addition, climate change performance (at least in respect of carbon emissions) has become hard to hide and can be threatening to a company's reputation. Carbon reporting has become a public relations exercise which can positively shape brand image. Transparency also provides companies and their stakeholders with the ability to track and manage their corporate emissions and therefore, perhaps reduce cost, risk implications and also the consequences of new/upcoming regulatory requirements. Protection perhaps requires substantive corporate response while transparency might serve well for their corporate symbolic practice.

Table 39 presents some examples of corporate climate change identity claims around climate change and sustainable development. Entries in **bold** provide examples of how companies have reported, focussed on each theme.

Table 39: Examples of Corporate Representing

Themes	Examples	
	Climate Change	Sustainable Development
PROTECTOR	Changing temperatures and weather patterns brought about by climate change are further impacting natural ecosystems and the environment. We know that business alongside government, iwi and communities all **have a role to play together in ensuring our natural environment is sustained for the wellbeing of future generations.** (Air New Zealand SR 2016, p.46)	PGG Wrightson is committed to **protecting our natural environment for future generations** (PGG AR 2013, p.32)
PROVIDER	Various products and programmes that **we offer help our customers improve their environmental footprint** (PGG AR 2015, p.26)	Contact is a company committed to the development and use of geothermal energy. Why? **It is renewable, it is clean, it is financially secure, and it is always available to power Kiwi homes and businesses-today and into the future** (Contact Energy AR2014, p.5).

Themes	Examples	
	Climate Change	Sustainable Development
RESPECT	-	**Our deep respect and passion for nature** is what has also earned New Zealand an enviable position as one of the world's leading destinations (Air New Zealand SR2016, p.46).
RESPONSIBLE/ COMMITTED	Real or not, climate change remains an issue for businesses and governments everywhere. For **Mainfreight, it begins with accepting that our business is based on an activity that generates carbon emissions and therefore taking responsibility to reduce those emissions over time** while maintaining our competitiveness and ability to deliver quality services as our customers expect (Mainfreight AR2012, p.26)	At Kathmandu, **we take social and environmental responsibility to heart**. We passionately believe in the importance of sustainable product development and running an ethical business. We strive to minimise our environmental impact and look for ways to contribute to the broader community, aligning our values with those of our customers, team members and society (Kathmandu SR2012, p. 11)
EXPERT/ LEADER	**New Zealand environmental leadership Spark New Zealand is playing its part in helping the country tackle the challenge of climate change** (Spark AR2014, p.43)	In addition to reducing the environmental impacts resulting from the manufacture and distribution of building materials, **we seek to play a broader role in leading our industries towards improved sustainable performance** (Fletcher Building AR2013, p.29)
TRANSPARENCY	**Kiwi Property was named one of the world's top 113 performing companies for leadership in carbon** disclosure, rewarding our efforts to reduce carbon emissions and tackle climate change through resource efficiency (Kiwi Property, SR2016, p. 11)	This, our 13th Sustainable Development Report, is aimed at recognising our environmental, social and economic achievements, challenges, lessons and development over the last 12 months. At Sanford, **we believe that transparency is a fundamental component of any successful company and this is why we seek to openly repor**t our movements, both forward and backwards, to our stakeholders (Sanford SR 2012, p.41)

6.3.1. Protector

Through this theme, organisations communicate their corporate identity towards climate change mitigation via the role of a protector. The representation of organisations as a protector is not a common theme but is effectual. Air New Zealand, in this case, states that they hope to protect ecosystems and New Zealand's natural heritage.

> We know that business alongside government, iwi and communities all have a role to play together in ensuring our natural environment is sustained for the wellbeing of future generations. Our goal is to make a significant contribution to New Zealand's conservation and climate science programmes. In doing so we hope to restore and protect ecosystems and New Zealand's natural heritage (Air New Zealand SR 2016, p. 46).

In the Air New Zealand reports, however, left unanswered was how much of their own funding they contributed towards national conservation or sustainability programmes. In their Sustainability Report 2015, Air New Zealand noted that "In the past year the Air New Zealand Environment Trust has received approximately $127,000 from the customer contributions" (p. 23). As compared to the loss of New Zealand biodiversity, it is arguably a small amount. In addition, their current programmes (e.g., Climate Science in Antarctica, Great Walk, etc) provide only stories and anecdotes regarding their commitment to dealing with climate change and biodiversity loss. These stories are not representative of the performance of the firm more broadly, perhaps providing stakeholders with "feel-good statements". Their actual contributions of these programmes toward the planetary boundaries in general and climate change and biodiversity in particular remain unanswered.

Representing their business as a protector establishes a position and role for organisations. Air New Zealand attempts to accomplish this by collaborating closely with the Department of Conservation/Te Papa Atwahai (DOC) and working with DOC and iwi partners Ngai Tahu, Ngai Tuhoe and Manawhenua ki Mohua to support a series of

biodiversity projects and climate change projects. They also work collaboratively with Activate Tairawhite (an integrated tourism and economic development agency, co-funded by the Eastland Community Trust and the local council and partners for new tourism products). As a protector, Air New Zealand positions itself as an authority to shape the direction of sustainable tourism in New Zealand. Tregidga (2006) argues that the organisational discourse on sustainable development expresses an organisation's concern with the environment and society through the theme of protector, subsequently indicating an hierarchical relationship between environment, society and business.

6.3.2. Provider

This is one of the most common themes within the texts analysed in relation to corporate identity constructed with regard to climate change mitigation. One way that organisations are represented is as providers of products and services within the scope of their operations. Their role varies in different sectors such as technology (Spark and Chorus), secondhand – trading market place (Trade Me), agriculture products (PGW), construction (Fletcher Building) and transport (Auckland International Airport).

The reports analysed refer to the provision of technologies in helping their customers and business partners reduce emissions through measuring and managing carbon emissions, achieving energy efficiency improvement, reducing travelling, and cost reduction (e.g., Spark AR 2012, 2014, 2015, 2016). Spark assured stakeholders that they can equip households and organisations with the tools to live and work more sustainably.

> Providing our customers with infrastructure services, procurement services, software solutions, training services, consulting and partnering that assist them in meeting their own sustainability objectives. Our technologies can enable customers to realise cost reductions and environmental benefits, for example, through measuring, managing and reducing carbon emissions, achieving efficiencies, minimising compliance costs, reducing travel through videoconferencing and Telepresence solutions and by helping to reduce and manage ICT energy consumption (Spark AR 2012, p. 46).

However, how Spark's stakeholders can use this information and communications technology system and services to inform themselves of the real change in the physical environment to their own actions of emission reductions remains unanswered. Furthermore, absent in their report is their own reliance on purchased goods and services, for example, using energy from fossil fuels for their stores and office's air conditioning and electricity consumption and substantial volume of transport of goods. How do technologies help them reduce their own emissions? Can they unambiguously connect change in the physical environment to their actions over a given period? Can they trace this against scientific measures for limiting the global temperature increase to less than 2ºC? Do they encourage customers to reduce mobiles and other technological equipment consumption because this could perhaps help customers reduce costs and generate less waste? If not, arguably, they have only engaged in rhetorical action.

By providing an online platform, Trade Me helps Kiwis buy and sell and reuse over 6 million used items every year. Overconsumption of natural resources is changing nature and affects human lives. While it is obvious that secondhand trade is good for reducing waste, environmental savings have not been assessed yet in their corporate reports. The fundamental premise of the Trade Me used goods marketplace is the reuse and recycling of goods by members – one person selling unwanted goods to another. (Trade Me AR 2016, p. 42)

Which second-hand objects contribute to saving the most significant carbon emissions? How much carbon emissions can be saved? From my perspective, instead of keeping the object (e.g., car) running and well-maintained, you sell it to a new owner who will continue to drive it. In addition, if you replace it with the new one (e.g., even hybrid or electric car), it might not be emission-free as it is connected to a coal-burning power source and there has definitely been an environmental impact in their manufacture and

shipping. Moreover, all those second-hand goods need to be distributed, often by fossil-fuel-based transport. Highlighting the postitive elements of the system while neglecting the negatives, demonstrates the potential symbolism involved.

This statement from Fletcher Building demonstrates their innovation of turning wood waste into energy bricks. The impact of their product and its produdction is difficult to assess as they are not anchored in specifics:

> Laminex New Zealand has taken a loss and made it into a profit by turning wood waste at their Taupo site into energy bricks – an innovation that has been given the thumbs up by industry experts for saving the planet thousands of tonnes of landfill waste and greenhouse gas emissions each year (Fletcher Building SR 2016, p. 29).

As providers, these organisations have represented themselves as having a good understanding of how to mitigate climate change. This representation of a provider strengthens the position of organisations because it not only affects the understanding of corporate identity in mitigating climate change but also has an effect on the notion of corporate climate change mitigations. However, by only providing products and services, organisations conform to a role in climate change mitigation without extending their traditional influence domain.

6.3.3. Responsible/Committed

Responsible commitment is one of the most common themes within the texts analysed in relation to corporate identity constructed with a focus on climate change mitigation over a period of five years (2012 to 2016). Although this is more common than other themes, the statements are somewhat vague and therefore do not lead to a particular constitution of meaning:

> The strategy's overall objective is to consciously manage the four key elements (environmental commitment, environmental management, sustainability, climate change) that drive Telecom's carbon footprint, by making small differences each day in everything we do at work (Spark AR 2013, p. 43).

How these small differences each day make their contribution in terms of emission reduction that can be measured against scientific standards is left unanswered.

Furthermore, it is interesting to have insights into why these organisations have made a commitment to emissions reduction. First, they accept that their business operations generate carbon emissions and therefore, it is their responsibility to reduce its impact.

> Real or not, climate change remains an issue for businesses and governments everywhere. For Mainfreight, it begins with accepting that our business is based on an activity that generates carbon emissions and therefore taking responsibility to reduce those emissions over time while maintaining our competitiveness, and ability to deliver quality services as our customers expect (Mainfreight AR 2012, p. 26).

Second, the Kyoto Protocol – the International treaty and Paris Agreement that commit countries to reduce greenhouse gas emissions based on scientific confidence, is perhaps the threat to them.

> We cannot be apathetic nor panicked about (climate change). We simply have to engage with reality positively and confidently. (Air New Zealand SR 2015, p .2)

How to tackle climate change is left unanswered. Mainfreight emphasises the climate change uncertainty regarding carbon trading and effectiveness of the measurement system and have not provided any further information to position themselves against scientific evidence and other climate change regulations.:

> Notwithstanding the uncertainty and debate surrounding carbon trading methodologies, the effectiveness of the measurement system under the Kyoto Protocol, and the actual effects on the environment from carbon emissions, Mainfreight remains committed to reducing our carbon footprint (Mainfreight AR 2012, p. 29).

Thirdly, they are aware of the disrupting effects of climate change on their business operations. Climate change is the challenge they need to face. It is a signficant risk to their business model, as Sandford recognises:

> Climate change is now affecting every country on every continent and the disrupting effects are likely to have a significant impact on all of our stakeholders. In particular, we are conscious of the climate change impact on the oceans and therefore the risk to our very business model (Sandford AR 2016, p. 114).

Another way that organisations are represented is as a commitment to track, measure and manage greenhouse gas emissions. Measuring and managing the firm's greenhouse gas emissions are an inadequate means for ecological sustainability, however. Milne and Gray (2013) suggest that measuring carbon emissions might not be useful in stimulating total emissions reductions Companies can use it to legitimate un-sustainable economic activity through offsetting, or deflecting attention to emissions efficiency while total absolute emissions are still increasing. The authors also argue that measuring and managing corporate carbon footprints will come at the expense of other unsustainable impacts such as water quality, habitat and biodiversity loss. Kathmandu recognises this trade-off:

> The way we run our operations, design stores, transport products and manage waste all have environmental impacts. Proactively managing our carbon and waste footprint remain our key priorities (Kathmandu SR 2015, p. 34).

Some companies in the sample (Warehouse Group and Trade Me) are also represented as carbon neutral organisations. For example:

> We have been carbon neutral for five years now, and are proud to facilitate the reuse of secondhand items worth more than $400 million each year (Trade Me AR 2012, p. 22).

A company may use voluntary carbon offsets for countering carbon from their unfriendly travel and electricity consumption. These activities can be understood as a step towards ongoing decarbonisation of the company practices. However, while Trade Me might offset its emissions, it may not do so for all the goods bought and sold and transported because of its trading platform. Unfortunately, it has been criticised for providing green-washing business-as-usual actions (Boykoff 2013). We cannot adopt feasible

mechanisms to offset emissions in New Zealand. It means that the only solution is to purchase carbon credit to offset elsewhere in order to reduce emissions. Additionally, we cannot offset our emissions through purchasing carbon credits in terms of the physical impossibility and cost prohibition (Milne & Grubnic, 2011).

Organisations describe mitigating climate change as work in progress and something to be achieved in future:

> As a significant user of fossil fuels in New Zealand, we are striving to conduct our operations as efficiently as possible and looking for future carbon solutions. Our modern fleet, adoption of innovative technology, and collaboration with partners on efficient flight paths and potential sustainable biofuel solutions, all play an important role. And on the ground, we're reducing our footprint by investing in new vehicle technology that utilises New Zealand's renewable electricity (Air New Zealand SR 2016, p. 38).

By portraying themselves as on the path or moving toward mitigating their climate impacts acts as a metaphor that emphasises the process and not outcomes, businesses can avoid the criticism of doing nothing while deflecting attention away from debate over the actions they must do to ensure ecological sustainability (Milne & Gray 2013). Without ecological data mapped to organisational behaviours, action in mitigating climate impacts is arguably just rhetoric of presentation.

6.3.4. Expert/Knowledgeable/Leader

This is the representation of organisations as a leader/experts/knowledgable in mitigating climate change. Statements representing the organisation as leaders in mitigating climate change are predominantly focussed on a position of competitive advantage for their organisations. For example:

> Spark New Zealand is playing its part in helping the country tackle the challenge of climate change. We are already a low-carbon business and are focused on reducing our emissions further still. The nature of our telecommunications services also helps other New Zealanders transition to a low-carbon future (Spark AR 2014, p. 43).

Furthermore, leadership is presented in the texts with reference to the role of influencer and promoter of climate change mitigation to other organisations. Air New Zealand notes:

> The significant climate change impacts arising from aviation should not be downplayed. And whilst Air New Zealand is among the industry leaders, with regard to trialling and adopting more efficient technologies and flight operations, there is no 'silver bullet' technological solution to this core challenge. Working with others in the sector will be crucial in tackling this challenge (Air New Zealand SR 2015, p. 4).

Leadership is also conveyed in terms of reporting:

> Fonterra was the first major dairy producer to provide a full life cycle of its greenhouse gas emissions of 2004/05 in NZ. The methodology measured and established a carbon emission baseline for Fonterra to use as a benchmark against future performance (Fonterra AR 2012, p. 40).

Related to the representation of organisations as leaders in mitigating climate change is the representation of organisations as knowledgable. This knowledgable identity is achieved through their participation in scientific research:

> PGG Wrightson is a member of the Pastoral Greenhouse Gas Research Consortium, an industry-wide group seeking to develop technologies to reduce methane emissions from ruminant livestock. The Company also participates in breeding and research programmes which aim to tackle issues such as improved plant efficiency, increased drought tolerance and reduced nitrate leaching. Good stewardship also requires that farmers undertake crop rotation and PGG Wrightson works closely with our seed growers and with our farmer customers to ensure appropriate practices are in place on-farm (PGW AR 2015, p. 26).

6.3.5. Transparency

The next representation of organisations toward climate change mitigation is the representation of organisations as transparent, predominantly through the Carbon Disclosure Project (CDP).

The Carbon Disclosure Project is a not-for-profit organisation that has been the backing of 551 financial institutions that controlled assets of $100 trillion (i.e., CDP signatories;

CDP, 2016). Since 2003, the CDP has annually requested the largest companies from different countries across the world to respond to the same set of questions and disclose their GHG emissions, climate change risks and opportunities and strategies to address them (Kolk *et al.* 2008). This programme encourages companies to measure and disclose their GHG performance because they cannot manage their GHG emissions if they don't measure it (Schatsky 2009).

Depoers *et al.* (2016) argue that while both the CDP and corporate published reports can be used to report GHG emissions, their audiences differ, and hence, have different objectives. The CDP is used as a standardised response to pressure from institutional investors. The CDP claim that companies benefit because first, it provides a means for them to analyse their greenhouse gas emissions and internal energy policies. Secondly, it promotes an opportunity for business to identify their strategies for emissions management and reduction. Andrew and Cotese (2011b) claim the CDP has the capacity to influence emerging mandatory regulation while raising the corporate profile of climate change. In contrast, corporate reports target a wider audience and offer corporate managers considerable optional space. In other words, in public corporate reports, managers can easily "cherry-pick" good news to portray their environmental performance improvement.

> We benchmark our sustainability initiatives through the global Carbon Disclosure Project and where appropriate we seek Green Star certification for our new buildings. GMT achieved a rating of 90D from the Carbon Disclosure Project in 2015. The rating reflects the quality of disclosure and performance on actions taken to mitigate climate change. We have made a commitment to sustainable development and are continually working to improve our relative performance (Goodman AR2016, p. 83).

Absent from the reports is any need for verification and auditing of greenhouse gas emission information, which remain unaddressed in corporate discourse. CDP (2018) emphasises that neither CDP nor the scorers or report-writers verify the information in

any individual company response. The businesses are advised to provide information that is as complete, accurate and reflective of their company's current situation as possible. In addition, Andrew and Cortese (2011b) argue that although CDP recommends the use of the Greenhouse Gas Protocol to report greenhouse gas emissions, it is not a compulsory requirement for the companies. The Greenhouse Gas Protocol is the most widely used international accounting tool for government and companies to measure and manage GHG emissions. Therefore, it raises the question of the credibility of these GHG data.

CDP recognises the role of first reporters and leaders with regards to climate-related disclosure, mainly through their Leadership Indexes – the Carbon Disclosure Leadership Index (CDLI) and the Carbon Performance Leadership Index (CPLI).

> First reporter: We were one of the first property businesses to measure its carbon emissions with annual benchmarking since 2006 through the carbon disclosure project. This has allowed us to monitor and improve our environmental performance (Goodman AR 2012, p. 20).
>
> Leader: The Warehouse was recognised by the CDP as a leader within the NZX50; this put it on the 'CDP 2014 NZX 50 Climate Disclosure Leadership Index' (Warehouse AR 2015, p. 46).

The CDLI sheds light on the companies best meeting the market need for investor-quality climate data, whereas the CPLI identifies which companies are demonstrating best practices in terms of strategy and emissions reduction. The CDLI secures the continuance of target disclosure as well as the companies' progress on GHG emissions to help stakeholders keep track of corporate performance. Targets contribute ten percent of the overall performance core with higher points available for absolute targets (CDP 2014). However, corporate emissions performance is not assessed on the basis of the specific climate stabilisation threshold (which is a science-based target or IPCC target) but on where CDP think the leaders in the sample are to ensure that only the leaders make it into

the index. In addition, information related to the science-based climate stabilisation model which the corporate emission reduction targets reflect is not requested. This is because CDP is not of help to companies for establishing their strategies or define policies in terms of climate change. It is perhaps only to call the attention of companies to the fact that the targets they are setting are not good enough based on current science (Baue 2012).

Companies expressed their performance is above the average of other listed organisations, for example:

> The Fletcher Building Carbon Disclosure Project 2014 disclosure score was 75 out of 100, well ahead of the NZX50 average of 65 (Fletcher Building SR 2015, p. 5).

Apart from CDP, the companies also adopt other standard/ protocol to measure, manage and reduce their carbon emission. For example, Goodman noted that:

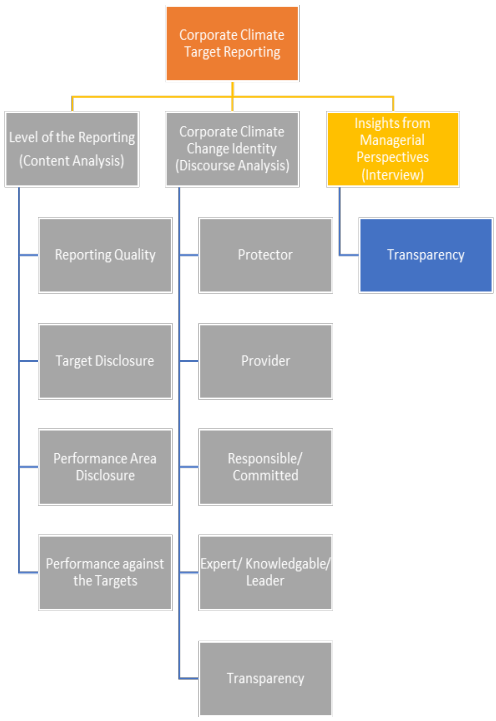
> We undertake an annual assessment of our energy consumption and carbon emissions, in accordance with the New Zealand Guidance for Voluntary, Corporate Greenhouse Gas Reporting protocols (Goodman AR 2014, p. 69).

The transparency theme is one of the most dominant themes when organisational identity including climate change mitigation is represented. CDP and GHG protocols emphasise that organisations measure in order to manage their emissions. Organisations can use the CDP and other types of carbon certification to legitimate continuing unsustainable economic activities. What we cannot learn from these CDP index ranking is the contribution to climate change threshold (IPCC targets of 2^{o}C) that the organisation has made. Measuring and managing carbon emissions are not sufficient because they may come at the expense of other unsustainable environment-related impacts such as on water, habitat and biodiversity loss (Milne & Gray 2013).

6.4. Reporting/ Transparency – Insights From Managerial Perspectives

The colouring of Figure 25 illustrates the main focus of this section, which provides further insights from managerial perceptions in regards to the transparency of corporate carbon emissions reporting.

Figure 25: Managerial Insights in Corporate Climate Change Reporting



An effort to discover whether the information disclosed in corporate reporting is a true reflection of corporate activity was incorporated into the interviews. This is explored in the following sections, documented through my discussions with senior sustainability managers.

The level of transparency of reporting is positively correlated to the pressure exerted by significant stakeholders. Companies consider climate change as a material issue that has a significant and direct impact on their operations. The generation of this climate-related information is useful for decision-making both by companies and their stakeholders. Companies must manage their relationships with these stakeholders. Therefore,

transparency helps them build trust with their stakeholders. It allows external stakeholders to evaluate corporate activities and to take them into account in their own decision-making about the firm (Deegan 2002, Ward *et al.* 2009). Transparency about corporate climate change performance creates a favourable position for a company, as the following interviewees suggest.

> We are a transparent business that what customers expect and what investors increasingly expect and we see that as part of the way we have to do business now is we do great transparency and take good care of your carbon emissions (Construction A, Interview 1).

> We try to be really as transparent as possible about what we do in the report. I don't think it served anyone's interest for us to kind of hide things away and being unclear about things I think we always keep going back to our materiality (Utilities D, Interview 1).

It is notable that there are several ways companies could claim their institutional credibility for what they perform and report. First, third party assurance for their stated corporate GHG emissions data allows companies to assure their stakeholders that they undertake the best practice and are making an absolute reduction in their GHG emissions. Verified emissions data brings confidence to stakeholders that the information and associated statements included in reports represent a true and fair account of a company's emissions (Gouldson & Sullivan 2007, Kolk 2008). Here's one example:

> So on the sustainability report, we comply with GRI4 and we had assured by Bureau Veitas New Zealand so through that it is quite robust - to ensure that you report on materiality, you report on the positive and negative performance (Agriculture A, Interview 1).

Second, companies can align themselves with the international accounting and reporting guidelines such as GHG Protocol, ISO 14064, Global Reporting Initiative, and the Carbon Disclosure Project reporting standards, which serve to inform their stakeholders of their progress towards achieving sustainability goals, and to increase the ability of

stakeholders to accurately assess, benchmark and compare differences in climate change performance across firms.

> We report on our annual report and we use the GHG Protocol. We have a system with that. We follow the Global Report Initiative and reporting principles (Oil and Gas A, Interview 1).

Corporate sustainability reporting is not mandated in current New Zealand regulations and policies but is influenced by best-practice reporting guidance/standards. As adopting these reporting guidance or standards remains voluntary, companies are free to select between what guidance is available in order to claim compliance and receive associated credibility. They tend to choose the most favourable information to report rather than provide full emissions inventory:

> Once we got that information and we are comfortable with it going out it is not really an issue. Just more to make sure that information that creates our goal (Real Estate C, Interview 1).

Reputation management is one of the rationales for companies to report their practices towards sustainable development. Unfortunately, many direct and indirect impacts that should be reportable are ignored in corporate sustainability reports (Bebbington *et al.* 2008). This is also discussed in Chapter 8.3.4 – Target Boundaries). Incomplete reporting serves as a legitimacy tool which allows companies to demonstrate their response to stakeholder's pressure by providing insufficient information that will not allow for meaningful accountability (Cho *et al.* 2010). Incompleteness also indicates that it is unlikely the GHG emissions disclosure can allow for meaningful benchmarking and comparison across firms. It raises doubts about its efficacy in altering organisational behaviour or improving sustainability and the bottom line (Bansal & Roth 2000).

In 2018, 6,937 companies around the world have submitted the CDP's climate change questionnaire including 366 of the world's biggest companies by market cap. Among those companies, New Zealand organisations can be seen to have low-quality climate

change reporting. These companies are falling behind and need to improve their climate change disclosure to satisfy their investors and other stakeholders. None of the New Zealand companies was in the A-List in 2018, indicating that these companies are not leading in their actions to manage environmental risks and opportunities and impacts related to climate change (CDP 2019). CDP grades businesses with an A to D scheme. In 2018, only 139 out of 6937 companies disclosing on climate change have received an A score for their actions to mitigate climate change. Some domestic companies recognise this shortcoming:

> We are not leading and we don't appear clearly in the leadership level with the CDP at the moment (Construction A, Interview 1).

The quality of climate-related reporting by New Zealand businesses is lacking in transparency. One of the reasons given for this is that as compared to other countries, New Zealand's companies have just started out on their corporate responsibility reporting journey, particularly, on climate change mitigation. Many expect that the quality and integrity of their reporting on climate change are going to increase.

> We are quite pleased with what we are tracking on that. We would like to get an A but we are realistic in terms of where we come from and in fact, compared to many other organisations in these parts of the world, I mean, in Australia and NZ, we are actually pretty good. So what you have seen is another part of the world such as Europe companies there have several years had started and they are much more sophisticated in that area so they are getting A. But we are doing more work to get there. So we would be looking toward that in the next few years but we've got somewhere to go. (Telecommunication B, Interview 1).

KPMG (2017) argues that the introduction of the new NZX Corporate Governance Code (which took effect on 1 October 2017) is likely to act as a catalyst for better business reporting by raising the bar on what is expected. Its more holistic approach will hopefully see box-ticking compliance consigned to the side-lines and frameworks such as Integrated Reporting and GRI being used as critical business tools to understand, define

and enhance corporate value. There is certainly room for improvement in terms of coverage and quality of disclosure as some companies claim that they are working towards providing more data in the future:

> We will be publishing our target transparently. And I think that we are accountable to our stakeholders and investors I think the expectations of the company going forward. They are transparent and they are publishing the way perhaps, not favourable or not on track. I think the tolerance from both of the way we communicate that is going to publish to get less and less really. I would say that it is something that you need to do if you are a good business now (Construction A, Interview 1).

Conversely, some companies choose not to report their emissions data through CDP. Non-response can be perceived as an organisation having a limited understanding of risk, or no meaningful progress to report. Without responding, the organisations could not have benefited from scoring and ranking data, nor help compare themselves to industry peers.

There are several determinants of non-response decision to CDP questionnaires. First, preparation costs are the direct costs and expenses for systematically collecting, processing and disseminating this information. The preparation costs for voluntary CDP reports are substantial, as noted here.

> The reason we have not done CDP up until now because it did not feel necessary that we need to do that. However, this year, we will submit it. We are just about complete CDP live version that we do at first. That is just because of resource constraint. It is a big overhead for the company (Tourism A, Interview 1).

Second, managers can avoid revealing commercially sensitive information to the public as disclosure of this information through CDP might spark negative publicity. Stakeholders such as competitors can utilise the company's GHG emissions to evaluate its operational growth and efficiency. Regulators can impose more stringent rules and requirements on company's GHG emissions performance. In an attempt to maintain reputation, companies only choose to communicate their GHG emissions data with their

base investors. Other stakeholders are excluded. Without a mandatory requirement to report, there is little that can be done to publicly expose such corporate GHG emissions data.

> CDP is not part of the core reporting. It does not mean that much for our investor base. We directly report to our base investors and get their feedback. That is why we get the feedback done from our investors directly so that it will report the thing that they may find useful (Oil and Gas A, Interview 1).

Following the legitimacy perspective, firms provide selected information to alter public perceptions and expectations regarding their environmental performance when their legitimacy is threatened (Cho & Patten 2007, Patten 1991).

6.5. Conclusion

This chapter has examined how a sample of companies in New Zealand are disclosing their corporate climate change target, relying on content analysis, discourse analysis and interviews.

In the period from 2012 to 2016, there was a limited number of New Zealand top 50 listed companies reporting emissions-related information; only 19 of the 50 companies in the sample. Those reporting have had a low score for disclosure, indicating that there is a long way to go to meet the demand for disclosure of their contribution to climate change. This seems to indicate that climate change-related information is made in an incredible and opaque way. The results do not necessarily prove poor company actual performance, however, but who would know?. There is an increasing trend in a number of organisations reporting which might indicate growing awareness and recognition in the materiality of climate change issues.

During the same period, there were only 61 emissions related targets reported in these companies' annual reports and sustainability reports. The study also found that there is

an upward trend in number of targets disclosed by each organisation over the period from 2012 to 2016. Some of the companies might have more than just one climate-related target disclosed. However, none of them exhibited a quantitative connect to the planetary boundaries framework even though, after this period, seven New Zealand companies have adopted a science-based target approved by Science-based Target Initiatives (Auckland Airport, Contact Energy, Enviro-Mark Solutions, thinkstep Australiasia, Sky City Entertainment, New Zealand Post, and Fletcher Building Limited). In contrast, there is an increasing number of companies who set science-referencing targets noting that they are taking climate change into their strategic decision-making without any adherence to science-based targets.

The most popular category of performance against the carbon target is when a company had met its target. There is a very small number of cases where companies disclosed a target that they had not met. This indicates that companies are more likely to report positive information which is consistent with the legitimacy logic view that companies want to gain their legitimacy through setting and reporting the meeting of targets.

Companies have sought to build a common identity such as protector, provider, responsible, leader/expert and transparent reporter to establish a position and role for organisations. Companies in the sample might feel it difficult to articulate their protection identity around climate change while it is much easier to be transparent about their climate change impact. Protection perhaps requires substantive corporate response while transparency might serve them well in their corporate symbolic practice.

Transparency about environmental performance creates a favourable position for the company, which allows external stakeholders to evaluate their activities and to take them into account in their own decision-making. Companies can claim their institutional

credibility through (1) having third party assurance for their emissions data and/or (2) aligning with the international accounting and reporting guidelines such as GHG Protocol, ISO 14064, Global Reporting Initiative and the Carbon Disclosure Project. Unfortunately, as these are on a voluntary basis, and thus adoption of these standards allows companies to select positive information in order to claim their credibility, incomplete disclosure only serves symbolic legitimation which takes the place of substantial change in organisational behaviour towards ecological sustainability.

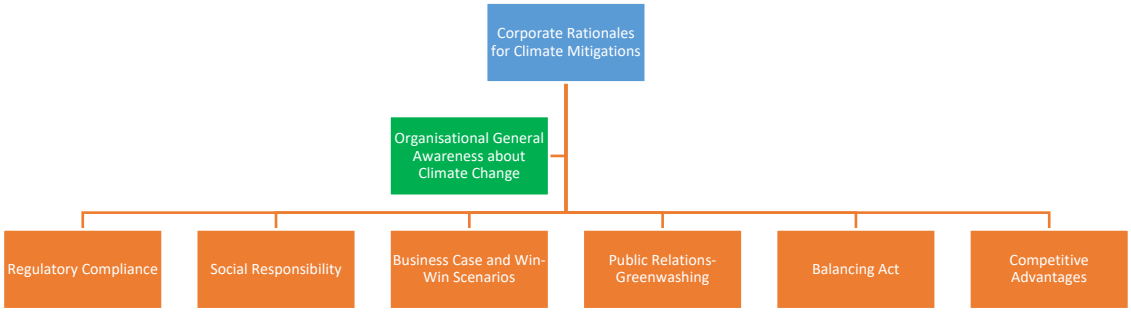
CHAPTER 7 – RATIONALES FOR CORPORATE CLIMATE CHANGE MITIGATION

7.1. Introduction

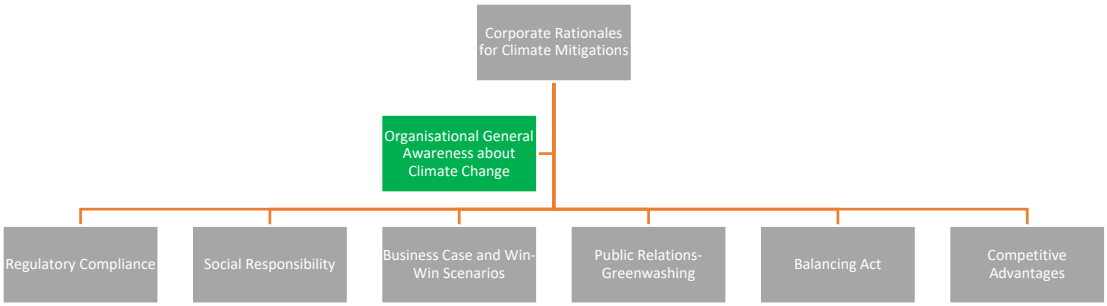
In the previous chapter, climate change corporate mitigation disclosure and climate target-setting were discussed. In this chapter, the rationales for corporate climate change mitigation are explored. The chapter draws upon the data collected from the document analysis (250 Annual reports, 52 CSR reports and 50 corporate websites), as reported by the top 50 NZX listed companies, and 29 interviews with individuals working for 18 sampled companies and another five non-sampled companies which have committed/approved science-based targets.

Six themes, (1) Regulatory Compliance; (2) Social Responsibility; (3) Business Case and Win-Win Scenarios; (4) Public Relations-Greenwashing; (5) Balancing Act and (6) Competitive Advantages, are identified and discussed when representing the corporate climate change rationales for mitigation. These are graphically presented in Figure 26. In regards to the document analysis, two themes (business case and regulatory compliance) represent dominant themes, with the business case being the most common. The other four themes (social responsibility, balancing act, competitive advantage and public relations) address themes which are effectual, interesting and significant to this study. Three themes, business case, social responsibility and public relations are prominent in the interviews.

Figure 26: Rationales for Corporate Climate Change Mitigation



7.2. Climate Change and Businesses' General Awareness



Prior to the development of a climate change response strategy, companies need to start with being aware of the climate change issue at hand and understand how important it is to reduce emissions-both for their business and the planet. Some companies might ignore sustainability challenges while other companies might take robust corporate environmental commitment to reduce their absolute emissions and increase their corporate resilience.

Some companies blame planetary destruction on other industries or other countries. These companies mainly come from less carbon-intensive industries. They argue that the more intensive carbon companies/countries should have done more to stimulate a move to a lower-carbon economy.

> Large emitters like China, US and other countries actually need to change the way they do things because they emit the most carbon (Telecommunication A, Interview 1).

> I don't think we need to change radically within our organisation. I think the focus is not necessarily on the real estate industry, the other industries in this country where the focus should be (Real Estate C, Interview 2).

The belief that the problem is "other's responsibility" blinds them to the real drivers of destruction. Blaming distracts from the bigger problem that climate change is a global issue and we all share a responsibility for creating it, addressing and mitigating its potential effects. It perhaps leads them to make mistakes in weighing significant choices between varieties of destruction and effective change.

Most companies in the sample realised that they are subject not only to physical climate risks such as natural disasters, damage to infrastructure and assets but also to the challenge of changing demands, new regulations that address emissions and supply chain interruptions. Perhaps it is most common that the importance of climate change is seen to be largely concerned with meeting the external demands of stakeholders. Stakeholders expect companies to identify and reduce their climate change risks as well as enhance climate related business opportunities.

> Our stakeholders, our shareholders, in particular, are interested in seeing risks and opportunities. Of course, how we manage our climate-related risks which is very important for them. It is one of the key things that drive us to report it externally (Utilities B, Interview 1).

> We are actually getting a lot of pressure from our investors globally to say you need to talk more about what you are doing and demonstrate what you are doing when it comes to emissions and other environmental issues (Telecommunication B, Interview 1).

Companies consider climate change as a material issue that has a significant and direct impact on their operations.

> Impacts of climate change, I guess it is our material. So if you have a material issue, essentially creating a capability actively managing that issue which then results in a session of target setting and the initiative development process and public disclosure on that progress (Transportations and Logistics B, Interview 1).

Climate change, therefore, offers both risks and opportunities to businesses that must be taken into account in the enhancement of corporate strategy:

> A climate change risk and opportunity analysis, from asset level through to strategic level, was conducted and informed the strategy development (Kiwi Property SR 2016, p.5).

7.2.1. Risks of climate change

For many businesses, the most common risk in framing climate change is concerned with the physical threats to their operations. This is especially evident in industries such as fishing, agriculture, electricity production, manufacturing and transport which in a climate-changed world are likely to be exposed to increasingly intense floods, droughts, fires and storms. Business seems to be the victims while human subjects and their experience are absent.

> Climate change, and specifically water temperature and quality (including ocean acidification), has been identified as the most significant risk to our business and is therefore captured in this Report, along with carbon reduction and offsetting (what we can do internally in response to climate change issues), and resource efficiency and utilisation, which contributes to our financial performance (Sandford AR 2016, p. 25).

Corporations have tried to identify risks to their operations and ways to reduce their vulnerability. In the example of a real estate company, the corporation with facilities at heightened risk of flooding or storm damage have begun to upgrade vulnerable infrastructure.

> We've done the climate risk on our buildings. We actually design our buildings to cope with more intense storms. It is the primary one which has an impact (Real Estate A, Interview 1).

Some businesses highlight the stance that climate change is a problem that can be somehow managed. It is a problem because they narrow the climate change problem down to a corporate risk, disregarding the innate complexities of the phenomenon. Many companies fail to acknowledge the urgency of a transformation to a low-carbon economy, which cannot rely on "business-as-usual".

Defining risk involves folding future uncertainties into the present. In the corporate discourse, climate change risks and uncertainties become managable. Through technological development, companies can take preventive action to escape the danger of climate change, and turn climate change into opportunities and profit. This will be discussed in the next section.

7.2.2. Opportunities for climate change responses

Wright and Nyberg (2015) remarks that the survival of capitalism needs the climate crisis to be managed in ways that allow for continued economic growth and consumption. Some companies have sought to present climate change as a space for new market opportunities.

Organisations in the sample indicate that advances in technology will bring about opportunities to reduce the impact of their operations on the environment. The IPCC (2014) made it clear that future investment in research and development will be a determining factor for the cost of emissions reductions policies. It is also clear that to achieve long-term decarbonisation of the economy, we need to implement a radical change in the mix of technologies used to produce and consume energy.

> Looking at your business from a carbon perspective, you will find opportunities to be more efficient with what you are doing. I think technology, electric vehicles, biodiesel and other [innovations] can help decouple carbon growth from business growth (Transportations and Logistics A, Interview 1).

Climate change mitigation is brought about through technological development and efficiency enhancement which drive companies to implement practices with lower costs that are more profitable and provide more environmental benefits. Unfortunately, though while technology is hopefully considered as a key tool for reducing GHG emissions, many either have little sense of technology that can be available to use at large scale or

in fact, the best technologies do not yet exist in key sectors such as manufacturing, construction, transport, agriculture, and other heavy industry today. They need to rely on the best technology from the past, which is no longer sufficient to tackle the challenges facing companies and the world. Thus, even they concede they need to change but stress this should occur in a way "so that nothing really has to change" (Swyngedouw 2011, p. 264). These illustrate how recognising the looming catastrophe validates new market-based solutions.

> The fact is that we do not have the necessary technology to be able to phase out some of the emissions sources from upstream providers (Utilities A, Interview 1).

> We are seriously looking at technology change, probably something we have not done before. But we need technology that can be applied globally, done on a large scale (Construction A, Interview 1).

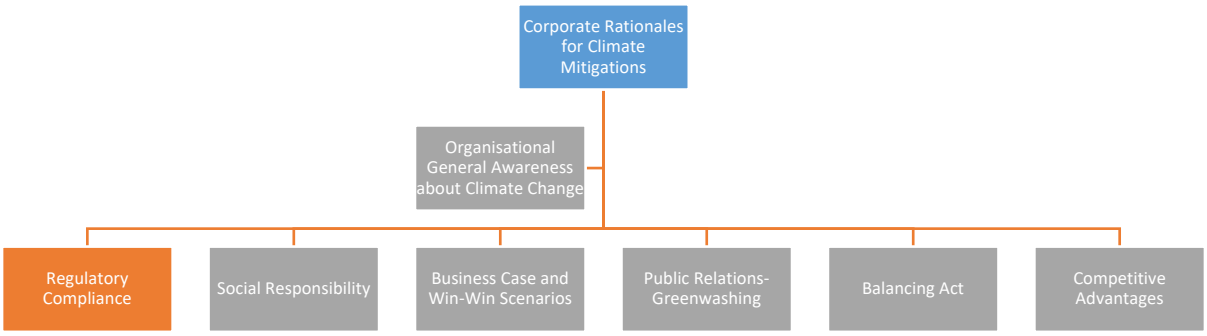
> We are hopeful for technological change but we are also realistic that something like that is out of our control (Transportations and Logistics B, Interview 1).

Using green technology may be less beneficial than expected because of rebound effects. This means that technologically-driven advances in energy efficiency increase consumption, and therefore, may further increase GHG emissions. Indeed, Bowen (2011) noted that promoting greater efficiency and cost reduction can actually result in escalation in GHG emissions through rising demand for a range of products.

> There is a massive opportunity to electrify the transport industry in terms of switching people to EV from fossil fuel power cars. But obviously, that requires more electricity generation because you have to have more electricity in order to be able to do that (Utilities D, Interview 1).

The next sections from 7.3 to 7.8 discuss the rationales identified for corporate climate change mitigation.

7.3. Regulatory Compliance



A first driver of mitigating climate change is regulatory compliance. This is a prominent theme. Corporate reporting has been shown to be a corporate strategy to fulfil regulatory requirements (Deegan 2002, Sullivan & Gouldson, 2012, Stubbs *et al.* 2013). Companies often refer to compliance and the need to comply with current legislation. The Emissions Trading Scheme, Market Listing Rules and the Zero Carbon Bill (now enacted) can be considered as some of the major drivers here as these are often referred to in corporate public reports and interviews. References to compliance are frequently mentioned among those high emitters, either as extractors or major users of fossil fuels, or particularly, those having obligations to the ETS.

7.3.1. Emissions Trading Scheme

Some companies are subject to the mandatory reporting requirements from the Emission Trading Scheme Regulations.

> We have been reporting our generation emissions that come out from our electricity generation for years underneath the Emission Trading Scheme. So we are required to report and to surrender carbon units underneath the ETS (Utilities D, Interview 1).

Indeed, an obligation to the Emissions Trading Scheme has the effect of encouraging lower-carbon behaviour. For example, a corporation could switch to greener production and consumption. Implementation of the Emissions Trading Scheme has an impact on

the company's margin and pricing strategies of goods and services as the price will reflect the costs of the emissions associated with their production. Reference to compliance is particularly common among high emitters due to their great use of fossil fuels. For large carbon-intensive companies, the financial liability is significant. They need to understand the emissions cost in order to invest effectively in carbon offsets (or choose abatement strategies).

> (Purchasing carbon credit) is a decent financial liability. It is not insignificant (Agriculture A, Interview 2).

> It is about the business future. It is about the economic cost. Yesterday (8 May 2019), there was an announcement about the Zero Carbon Bill. We will see more costs to come (Utilities A, Interview 1).

Companies can purchase voluntary carbon offsets to address some of the unavoidable emissions. Purchasing carbon offsets can lower a company's overall carbon footprint for things like manufacturing, shipping, and employee travel. Companies are investing in carbon offsets as they seek to improve their overall image, and contribute to their corporate social responsibility initiatives. Businesses are starting to quantify climate risk and factor it into their operational budget. The majority of companies in my sample purchase offsets to comply with regulations in place such as the Emissions Trading Scheme. Other less carbon-intensive companies are also purchasing voluntary carbon offsets to prepare for coming regulations. However, in order to meet science-based targets, they are not allowed to buy offset credits. Instead, they need to make an actual reduction in their emissions.

> Over the next one to two years we will look at what we can but if we set the science-based target as I understand, it also means that we cannot offset to achieve those targets so we need to make an actual reduction. So it is the tension between offsetting versus actual reduction but I think actual reduction is the right thing to do (Healthcare A, Interview 1).

There are consistent arguments against the purchase of carbon offsets.

> Offsetting to me is not quite right in regards to the fact that most of the emissions that we create are based on fossil fuel burning. Technically, you cannot offset fossil burning with a tree plant (Tourism A, Interview 1).

> The offset can be used as either way, people do not take very hard decisions in our business and it's easier to pay by money rather than actually making real changes within their business. The point is what you are trying to reduce your emissions and plant the tree at the same time rather than just wanting to offset the other. That is another issue (Telecommunication B, Interview 1).

Carbon offsets are a low hanging fruit option for businesses. It is essentially a "license to pollute" and may make them more likely to emit yet more carbon (Boykoff 2013). Offsetting makes it easier for companies to continue with their everyday practices rather than working towards changing them. Firms feel this enables them to just go on polluting, but with a clear conscience. One can argue that carbon offsets are actually holding back the progress of climate change mitigation. It is a dangerous distraction from the fact that the only way we can get to where we need to be is to pollute less (Wright & Nyberg 2015). Therefore, instead of purchasing carbon credits, some companies choose to focus on reducing their absolute emissions.

> We just try to reduce. We concentrate all of our efforts in reduction (Transportations and Logistics A, Interview 1).

> Obviously, we do what we have to do with ETS but we don't offset our emissions. Emissions that cannot be covered will be a very expensive exercise for us. Our opinion at the stage is that other things that we can spend that money on directly for reducing our emissions is actually better than going out and buying offsets at this stage (Agriculture B, Interview 1).

Choosing climate offsetting will increase costs for the companies. They therefore would appear to be less competitive against their peers if their rivals do not face similar carbon costs.

> If we offset all of our emissions and none of our competitors did, we wouldn't be able to price competitively. But we do have another strategy. So, we aim to be neutral by 2030. If our emissions are actually tracking an increase, we have to offset anything above the baseline we set (Agriculture B, Interview 1).

By adopting climate change mitigation, companies face challenges in a surge of raw material costs, carbon credits costs, capital expenditures in new infrastructure and machinary with lower emissions level and insurance premiums for assets located in at-risk areas. These increasing carbon-related costs will be passed along to their customers, with an impact on revenue. Companies need to establish new pricing systems, attain new market segments and opportunities. Investors take into consideration climate risks and exposure factors to estimate future cashflow of their investment (De Gruyter *et al.* 2015). Therefore, companies need to understand the extent to which climate risk has an impact on cashflow and costs of capital and their ability to compete in a carbon-constrained future.

Many companies report the impact of emissions trading on their financial performance, particularly, increased costs associated with the Emission Trading Scheme. Businesses will pass on costs to customers in order to recover these expenses through price increases (Leining & Kerr 2016).

> We have freedom in the financial system to absorb the cost and in some cases pass the cost on to customers (Agriculture B, Interview 1).

> Our operations are likely to see their costs increase, but we may be able to recover these expenses through price increases (Fletcher Building AR 2012, p.28-29).

Carbon credits can either be utilised to offset companies' own emissions or be traded on the market. Emissions are accorded a price, becoming an asset as well as an instrument for speculation (Wright & Nyberg 2015). Therefore, a new form of income (from carbon credit) could be available. Offsetting is considered as a new opportunity for profit which will generate a competitive advantage in a carbon-constrained economy.

> We set up the forestry investment to meet the obligations under the ETS scheme. Because of the changes of the ETS scheme, we will actually be in the position to either hold on to that credits that we do not need to surrender. Or we can sell those credits into the carbon market and actually generate revenue from them (Utilities C, Interview 1).

Carbon offsetting is a way that the environment is transformed into a commodity to be included in the market. The agenda immediately becomes profits rather than environmental well-being. The environment can be protected solely through the logic of market exchange mechanisms such as calculations of price and risk, negotiation, governance and accountancy of assets and speculations of futures and options. The environment, the planet, is valued only according to a supremely narrow definition of human self-interest and it is assumed to be controlled on a presupposition of stability, predictability and linearity. The complex Earth systems involved in climate change are reduced to a single commodity (Wright & Nyberg 2015).

In 2018, the Government decided to phase out their "one for two" transitional measure covering the 2017 to 2019 period; all eligible companies under NZ ETS have full (one-for-one) surrender from 2019 (NZ ETS 2018). Companies have realised the significant up-front cost to their business and customers due to the full surrender regime and that actions to reduce absolute emissions are therefore needed.

> Transitioning from a fifty percent unit cost to the full market price for emissions from 1 January 2019 represents an increase in cost to Contact and other emitters, and therefore a financial incentive to optimise our use of renewable resources available and to continue to reduce our emissions where we can (Contact Energy AR 2016).

7.3.2. Market Listing Rules

> I think the NZX already requires reporting, as the first step, they can increase the reporting. So I can see that is happening. NZX is actually requiring companies to report on carbon (Real Estate A, Interview 1).

Corporate GHG emissions transparency is encouraged in following the market listing rules. However, under the New Zealand's Stock Exchange listing requirements, it is voluntary for companies to publish their full GHG emissions inventory data. In recent years, several reporting frameworks have emerged such as the Integrated Reporting

Framework from the International Integrated Reporting Council and the G4 Guidelines from the Global Reporting Initiative.

New Zealand's Ministry for the Environment (2019) has proposed implementing mandatory climate-related financial disclosures which should be audited and accessible to the general public. This requires that listed companies measure, manage and report all material information about the impacts that climate change has been having on their business. It is believed that allocation investments will eventually contribute to and facilitate the way towards a low-emisisons economy. Unfortunately, it is not mandatory in the Zero Carbon Bill for NZ companies to have a climate-related report.

> The Carbon Zero Bill will require mandatory reporting requirement for NZ Government organisations, but I thought it didn't specify mandatory reporting for organisations or non-governmental businesses and that it did not make it mandatory for the Minister for Climate Change or the Climate Change Commission to require reporting (Healthcare A, Interview 1).

7.3.3. Zero Carbon Act

The Zero Carbon Act's target of transition to a net-zero emissions economy by 2050 might perhaps have a substantial impact on business because (1) it introduces a cap on emissions through the target of net-zero emissions for 2050 and puts a five year-emissions budget in place and (2) emission pricing will be a much more material issue for business through to 2050 and beyond. This is due to a much higher suggested price cap on emissions of approximately NZ$100 to NZ$275 per tonne.

> We don't know exactly how it would affect us but I think the carbon price would go up, naturally. It will incentivise the effort to jump properly or it will become even harder to emit CO2 from fossil fuel uses (Oil and Gas A, Interview 1).

Financial pressure is expected once the Zero Carbon Act is enforced. This is because the carbon budget will become tighter and domestic low-hanging emissions reduction will decline. Each subsequent tonne of emissions reduction becomes more expensive than the

one that came before. High ETS prices will encourage companies to change their behaviour toward reducing their level of emissions. With the uncertainty about future emissions limits and prices, it is a challenge for companies to change their investment patterns.

> We look forward to greater certainty concerning the legislation under review, namely the New Zealand Emissions Trading Scheme (NZ ETS) and the Zero Carbon Bill. Once the business sector has greater clarity it will feel more confident making investment decisions, enacting policy, setting targets and committing to or establishing accredited measurement and reporting programs (Retail A, Interview 1).

> I think (climate-related regulatory) certainty is very important because once the business has certainties, then you could plan and make the decision that you need to make. It does not matter how difficult that decision is, you still start a plan for those decisions (Telecommunication B, Interview 1).

Businesses need a price on carbon and setting one is essential to solving the climate crisis and enhancing their profits:

> We are going to start pricing our carbon. Ultimately, in the economic model, we are a free market. If carbon is not fully and completely priced, it can't drive the behaviour. We can't put our investment case up based on goodwill. As a nation, we have to price carbon and price it fully, not 25 NZ$ per tonne. It must be 300$ to 400$ per tonne (Real Estate A, Interview 1).

Nevertheless, companies indicate that the Zero Carbon Act coming into force in New Zealand conforms to the way that it is trending globally, and in fact, Government have not had a view beyond looking at the Emissions Trading Scheme.

> I think that the Zero Carbon Act is the minimum NZ should be doing from a political standpoint. In my perspective, it is not leading the world. It is just catching up with where we should be (Healthcare A, Interview 1).

> (The Bill) is better than nothing I suppose. They step in the right direction in order to start getting more action but I'm not sure if it is enough (Tourism A, Interview 1).

> So I think probably it is inevitable that something like the Carbon Act is coming into force in New Zealand which is the way that is the trending globally. There are still quite a few unknowns around exactly what it is going to mean and what it is going to be in terms of the price of fossil fuel and what will happen in the wider economy. I

> don’t think the Government is doing much beyond the ETS (Construction A, Interview 2).

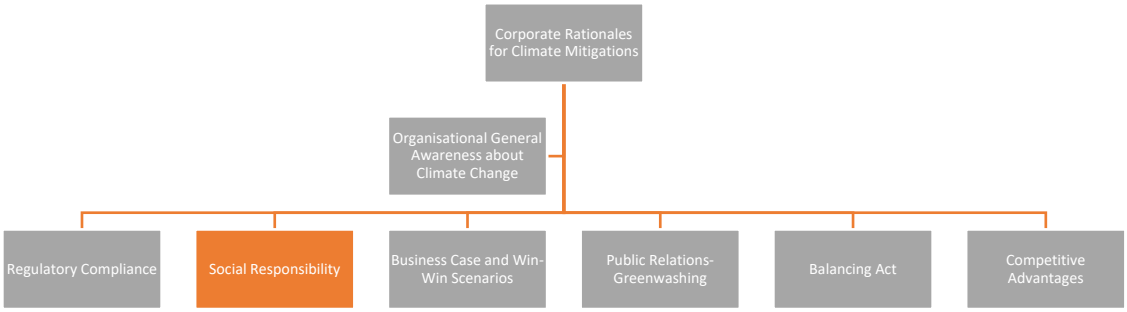
New Zealand’s Emissions Trading Scheme should be strengthened. The ETS should be comprehensive across all sectors, including agriculture. Like other industries, agriculture should face appropriate price incentives to reduce emissions. “I think the next consultation has a certain objective and will set a harder target for agriculture in the market, long term" (Real Estate C, Interview 2). It must be fully included in the ETS to allow them to respond to relative price signals.

As carbon prices increase, households and businesses will adjust in the same way that they do with any other change in relative prices. However, the political economy constraint is likely to prevent the introduction of a carbon price equal to the full social cost of emissions. Policy-makers tend to support policies that minimise salient impacts on businesses and household and minimise burdens on strategically important sectors (Jenkins & Karplus 2017).

> But I query whether it is politically acceptable, because we could put it in the ETS with the real credit price. We could put up carbon taxes to account for the externalities. You know that is all possible under the current economic system but politically we choose not to (Transportations and Logistics A, Interview 1).

> I think the majority of large businesses globally have the largest amount of carbon impact apart from the mining and chemical sectors, which are moving in the right direction. And that gives me hope. However, there is no linear agency politically to force that to happen so quickly (Healthcare A, Interview 1).

7.4. Social Responsibility/Right Thing to Do



Another motivation for reducing emissions is the concept of social responsibility, which is driven by social obligations and organisational values rather than by fulfilling other goals such as profit-making or maintaining their legitimacy.

There was considerable discussion of the topic of "doing the right thing". An interview with a healthcare company explained why they need to play their part in protecting the environment – the need to find solutions to climate change issues is a social responsibility:

> A lot of more people are going to hospitals because of heat stress in some areas, for example. But I think climate change has potential impacts that increase demand in the healthcare sector. The aim of our company is to provide a solution for the healthcare sector so you actually reduce the cost of our healthcare sector (Healthcare A, Interview 1).

However, some interviewees noted the action taken from a social responsibility motivation come from stakeholder's expectations. Furthermore, a majority in the collection of narratives in this study reveal mixed social responsibility rationales along with other rational and economic considerations. Undertaking climate change mitigation is an action for social good as well as providing an opportunity to enhance operational efficiencies and hence, the corporate's bottom-line.:

> I think it comes from the perspective that as a good corporate citizen we would certainly do what we can to reduce our emissions. The consequence of (the fibre network) investment happens to be that we would use less electricity so that is a positive thing that is ultimately for the amount of emissions in NZ (Telecommunication B, Interview 1).

> It started off by wanting to be a good corporate citizen. So that was demonstrating to our investors that we are responsible. It is really telling our investors that we are responsible and we are looking after assets to making sure that resilience is long term. And then there's our building programme, which tells the public that we are doing our best to be a good corporate citizen (Real Estate A, Interview 1).

For organisations that adopt a social responsibility approach, climate change mitigation strategy and practice was argued to be naturally aligned with their predetermined corporate values and mind-set. It is the job of the whole company. One of the fundamental corporate values is to raise awareness of climate change.

> Every business, every Government and every person and every council have to do something. And so obviously we are one of those organisations and we are also a key part of the value chain for products. If we do not reduce our emissions, no one else will, so we need to be responsible in the role we have (Transportations and Logistics A, Interview 1).

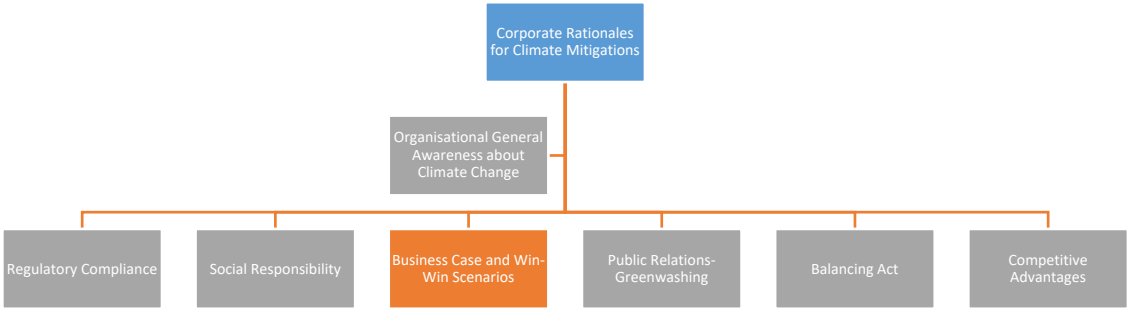
Leaders of organisations are seen as supporters of the climate change mitigation initiatives within the organisation:

> I think people in the company have the general feeling that within the company, particularly the CEO, who strongly supports sustainable business and sustainability-orientated people, one of our particular roles was to address sustainability and help people remove/lower use of fossil fuel over time (Oil and Gas A, Interview 1).

However, it is also a challenge to get other members in an organisation to share the view. It is sometimes difficult to change people's mind-sets, get the whole organisation on board to achieve the goal of transforming a corporation's traditional business practices into low-carbon ones:

> Setting a target is easy. Getting balance within the business at all levels of the business, from those operating on the floor who know how our power stations actually run through to our senior leadership, who got company strategy from our board and to whom we must be accountable. The public target we set influenced the business, giving us the opportunity to achieve that. That is the hardest part (Utilities B, Interview 1).

7.5. Business Case and Win-win Scenarios



Emissions reduction brings benefits to both environment and organisation, referred as a win-win scenario. A climate change-related financial win for the organisation is perhaps the most-often mentioned in corporate reports as well as interviews. It emphasises that by taking action on climate change, a company can improve its bottom line while at the same time reduce its contribution to environmental problems.

> We have a responsibility to reduce our greenhouse gas emissions from our operations and to contribute to reducing the impacts of those emissions on the planet. Reducing our emissions will also have positive financial and non-financial implications for our business and our current and future society (Contact Energy AR 2015, p. 36).

The business case is predominantly depicted by organisations through reference to financial implications to the business. Furthermore, cost saving is perhaps the most-often stated concern, achieved mainly through energy consumption cuts and better management.

There is no evidence of how these cost savings are to be made, but involves calls for designing a new and different business model (e.g., McDonough & Braungart, 2002; Milne *et al.* 2009). Instead, to mitigate climate change, energy efficiency increases or/and reductions in energy consumption are drawn from corporate reports. Eco-efficiencies allow companies to avoid the notion of absolute limits of natural resources. Companies

mostly focus on the low-hanging fruit, which is often through becoming more efficient in the use of energy. It is relatively easy to accomplish emissions reductions and at the same time, save costs.

> This is an energy efficiency project that ticks all the boxes. It's reduced carbon emissions in line with group strategy and brought significant savings for the business unit. The annual reduction in energy use would reduce energy costs by $33,000 a year, and cut annual CO2 emissions by around 79 tonnes (Fletcher Building SR 2015).

> I think it is probably fair to say we are looking to reduce our electricity consumption, but that is primarily because we bring in new technology, which is more efficient. And because there will be a significant cost saving as we reduce our electricity consumption. The reduction in carbon emissions is as a result of that (Telecommunication B, Interview 1).

There is a tension between growth and organisational "greenness". However, through the concept of eco-efficiencies (per unit rather than total or absolute measurement), organisations are able to grow while also reducing their emissions (intensity). Milne *et al.* (2009) were concerned that focus on efficiency and intensity measures allows companies to show environmental performance improvement while absolute impacts on the environment might be increasing overall. "Relying on eco-efficiency to save the environment will in-fact do the opposite – it will let industry finish off everything quietly, persistently and completely" (McDonough & Braungart 1998, p. 4).

In the case of an agriculture company, growth is typically linked to increased energy consumption, which uses coal to process milk. Therefore, economic growth can be decoupled from carbon emissions if energy efficiency is achieved, for instance, if non-renewable energy sources are replaced or through increased milk production:

> The target of neutral emissions growth to 2030 essentially means the decoupling in economic growth for our environmental impact so if we continue to increase milk production, the emissions will decrease and therefore you will have no net increase in GHG emissions. So if milk production increases by ten percent, we need to increase our efficiency by roughly ten percent so it is still zero growth emissions (Agriculture A, Interview 1).

To reduce emissions, some companies pick “low-hanging fruit” activities which are easily achievable immediate gains. For instance, emissions reductions should naturally occur if energy usage becomes more efficient. The low-hanging fruit concept is applied here because the strategy is less burdensome and carries a lower financial risk where business performance is positively affected and can succeed in the short-term.

> Basically, we have been taking the low hanging fruit which is optimisation from airfreight to sea freight and carbon saving is the big differential between airfreight and sea freight. This year we are almost at the bottom of the amount of airfreight we can use. So next year, we probably will not have any opportunity to reduce air freight without setting up additional manufacturing sites overseas that can reallocate where we would need to distribute globally (Healthcare A, Interview 1).

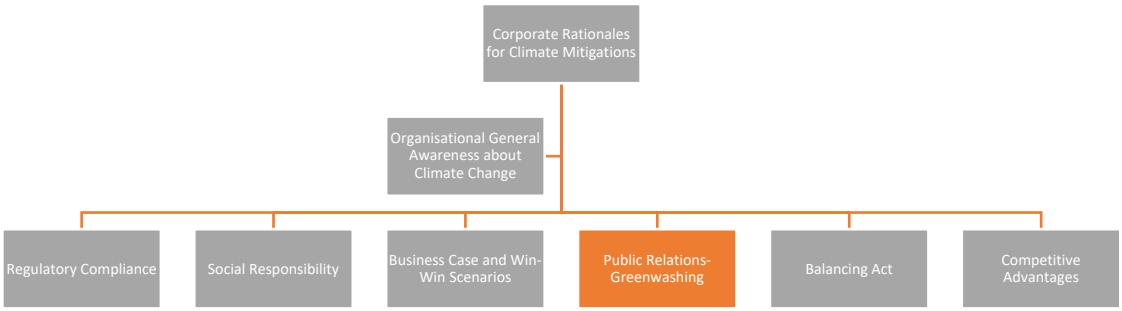
> Are you familiar with the term 'tailwind'? It means we had things happen that resulted in favourable conditions. The overall key thing that has been very much in our favour is group connected electricity in NZ, which has become much less carbon-intensive than it was five years ago. We are anticipating that everything is running in our favour at the moment, so we are anticipating at some point something might not. We have a relatively small footprint within our business and we can control it relatively easily (Real Estate A, Interview 1).

Wright and Nyberg (2017) note that low hanging fruit ideas and practices are amenable to a prevailing discourse of profit maximisation and business-as-usual. The lack of long-term thinking could mean strategies for mitigation are not in place. This potentially reveals a tension between meaningful engagement with the successful mitigation of the climate change issue. Indeed, companies are not implementing climate change response practices out of the goodness of their hearts. Corporate profitability is still the focus, while the benefits to the environment or the limited use of natural resources has not been noted.

> When we look at the project, we don’t look at it simply because we want to lower our carbon footprint. We look at it because we need to become more efficient because it would reduce our cost and help us provide better services for our customers. But obviously, the fact that we can do that at the same time as reducing our carbon footprint is very helpful (Telecommunication B, Interview 1).

> The reality for us is that we already had committed to an investment programme to build a fibre network and the consequence of that is we will reduce our emissions. We did not sign up to build a fibre network because we want to reduce our emissions. I would say it was by happy coincidence that we are investing in something that is actually very positive from the carbon point of view (Telecommunication A, Interview 1).

7.6. Public Relations – Greenwashing



While a company might have awakened to the climate change risk, corporate response can be not only strategic but also cosmetic: for example, by public relations through glossy reports and activities that showcase a company's social and environmental good deeds. It tends to leave out their company's emissions impact as a whole.

> We have a lot of brand activation where we raise awareness about climate change, encourage our customers to take part in and to reduce their footprint. The reasons why we do it are because it is important. It is good brand activation because you know we do work on a lot of things like sustainability. It is the way we engage customers, increase reputation and competitive advantages (Textile A, Interview 1).

Perhaps more importantly, climate change reporting is used to manage public perception. They do show their commitment to climate change with the aim of securing their license to operate.

> It expects general transparency about our product, our impact, including the carbon emissions of our businesses and the carbon of our continuing product projects. We are also generally part of our license to operate the businesses (Construction A, Interview 1).

Companies need permisison from governments and other stakeholders to do their business, often referred to as a license to operate. Stakeholders' opinions are of obvious importance, but these stakeholders lack information to fully understand and assess corporate capabilities as well as comeptitive positioning. Therefore, the company can choose an approach that devolves into the short-term practices of public relations with minimum value gained for the society.

Another way of managing their reputation with stakeholders is "excuse-making", such as noting that they cannot control the electricity grid and therefore their energy emissions. These companies use energy for heating and cooling of their computers and other electrical appliances.

> The biggest challenge is we can't control the electricity grid. We can only control our electricity consumption. When you look at our result this year, part of the issue was we kept our electricity consumption flat. But if it is a drier year from the hypothetical point of view, which means more geothermal production in NZ or thermal production in NZ from either gas or coal, that will impact upon our emissions. So it is the thing we can't control because we don't run electricity in NZ (Telecommunication B, Interview 1).

Electricity generators face great challenges in setting emissions reduction targets because setting the targets require estimation of their electricity generation emissions which depends mostly on weather as well as customers' demands. These are out of their control. For example:

> Absolutely the biggest challenge is the unpredictability of our electricity generation emissions. Basically, the majority of NZ electricity comes from robust hydro generation and in the middle of winter, the likely water level tends to be low because snow is not melting. But also in the middle of winter, you have a massive peak in demand because people are using their heat pumps and heaters and driers and all of those things. So at present, there is nothing to generate other than the use of coal. And also it is not something that is just our problem either, so the other electricity companies have to purchase electricity from us, from Huntley in order to provide electricity through to their own customers so it is not just our problem. And that makes it even more unpredictable because we don't necessarily know how much other electricity suppliers might purchase from us going forward. So it is a really tricky thing to be able to predict. And that makes it really tricky when it comes to target setting as well (Utilities D, Interview 1).

Carbon neutrality means companies reduce their GHG emissions and then offset an equivalent amount of any remaining emissions (mainly through the process or fuel changes) by buying carbon offset credits (Kilian *et al.* 2012).

As of the 15th of February 2019, the Warehouse group was officially recognised as carbon neutral through carboNZero certification. TWG is the largest retail company in New Zealand and only the third major retailer globally to be carbon neutral (Warehouse Website 2020). The firm cited the main motivation for the initiative: "We are doing this because we care about the health of our people, Aotearoa New Zealand and the planet" (Warehouse Website 2020). They do so through

> ... reducing their absolute carbon footprints as well as offsetting because if they do not reduce, they won't be able to afford continuing carbon-neutral because of the cost of carbon credits will increase over time (Sustainability Consultancy A, Interview 1).

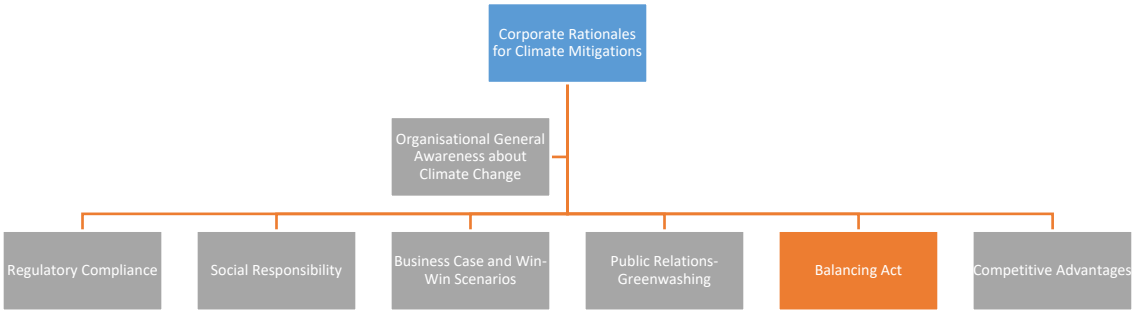
In the case of the Warehouse, they "have invested in international carbon credit projects from countries where we have manufacturing operations. These are Gold Standard carbon credit which is a widely respected certification standard globally for carbon offset projects" (Warehouse AR 2019, p.17). The adherence to a well-known offsetting standard increases their climate change credibility, and therefore certainly boosts the Warehouse's image in combating climate change.

The Warehouse also shows their commitment to science-based targets in support of the 2015 Paris Agreement's requirement of a "32 per cent reduction on 2015 carbon emissions by 2030" (Warehouse AR 2016, p.50). Unfortunately, their carbon neutrality plan might not go far or fast enough to help them meet the "science-based target" as it encourages the use of carbon credits offsets to cancel out their emissions with short-term carbon sequestration techniques like planting trees. To meet the science-based target, they are not allowed to offset their emissions but need to have an actual reduction. Carbon

neutrality is less efficient, less cost-effective but usually more politically feasible. Critically, carbon neutrality focusses on rhetoric rather than real accountability, empowerment and participation (Raco 2003).

> There is no linkage between carbon-neutral and the two degrees centigrade goal. Because their reduction target will be based on their actual emissions, not based on net emissions (Sustainability Consultancy A, Interview 1).

7.7. Balancing Act



Companies might employ the "soften strategy" which is to juxtapose emissions with the growth of flying demands and tourism demands. References to "balance" and "balancing" are used to articulate climate change mitigation as integrating economic, social and environmental goals (Milne *et al.* 2009). Although this theme is less prominent, it is important, as it requires organisations to consider three aspects of sustainability.

In this case, the urgency of emission reduction is downplayed by foregrounding the economy and demand. Air New Zealand emphasises it in its Sustainability Report 2016, which states:

> Critical though they are, emissions are only one part of flying's impact, and flying is only one part of tourism's much wider impact! And here the trade-offs are absolutely crucial (Air New Zealand SR 2016).

Despite the fact that flying allows us to travel a greater distance, the flights are bad for the environment in terms of their great impact on greenhouse gases per passenger mile. The aviation industry's emissions have come under increasing scrutiny in the climate change debate.

There has been increased investment in more efficient aircraft and an enhanced focus on increasing fuel efficiency. However, the real potential for eco-friendly flying looks rather limited. They still use fossil fuel to run the aeroplanes even there could be considerable gains in engine efficiency (i.e., lower emissions per passenger). The problem is that alternatives to regular aviation fuels such as electric power, biofuels, and the like are far from feasible for producing sufficient power for aircraft.

The International Civil Aviation Organisation (2018) – a United Nations agency – calculates that by 2050, international aviation emissions will grow a further 300 to 700 percent. Even though there has been considerable improvement in fuel-efficiency, those gains have been outweighed by the overall growth in demand for flights. The International Air Transport Association (2016) predicted that the number of passengers will double to 7.2 billion people by 2035, increased from 3.8 billion air travellers in 2016.

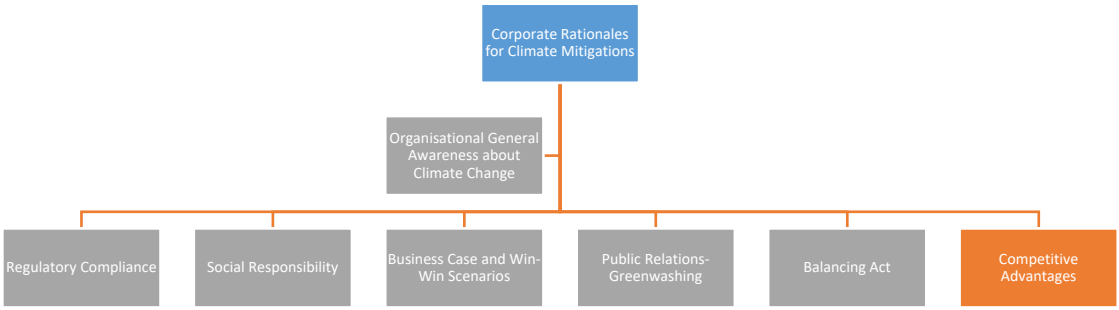
One way to reduce the impact of air travel on climate is by offsetting. Airlines could offer offset programmes, but as these are voluntary, few customers take up the option. It is not easy to find reliable and quality schemes offshore because there is a limited volume of unproductive land that would be willingly turned over to slower growing native plants which therefore generate less income from carbon credits. The aviation industry was excluded from the Kyoto Protocol on climate change and the 2015 Paris climate agreement because it is not easily managed within the individual countries' carbon targets.

The fundamental interests of major economic sectors which are also high emitters (e.g., fossil fuel, agriculture, air transport) are threatened by proposals to achieve reduction in emissions nationally and globally. These companies' response to this threat is unsurprising. They are subject to higher costs associated with the Emissions Trading Scheme and the subsequent increase in fuel prices. Despite the efforts of investing substantial amounts in low-emission technologies, there is no obvious scientific or technical confirmatory evidence for these changes and how they contribute to reducing emission in order to achieve global emission reduction target of 2^{o}C, or meet the "planetary boundaries". The traditional business practice remains unchallenged with the absence of emissions limits along with the presence of corporate balancing act. (Tregidga *et al.* 2013)

Air New Zealand emphasises that "there is no simple answer for this (climate change) challenge" (Air New Zealand SR 2016, p. 7). In other words, no radical changes are currently proposed to climate change action and so the company intends to continue with business-as-usual. They also indicate their important role in providing value to tourism and exports which are crucial to New Zealand's economy and a vital source of employment.

To attempt to achieve deep emissions reductions and secure long-term sustainability, business growth needs to be relatively or absolutely decoupled from climbing resource use and negative environmental impacts. Relative decoupling can be achieved where companies can slow down their rate of increase of natural resource use while maintaining economic growth. In contrast, absolute decoupling can only be achieved where companies can decrease their absolute emissions while maintaining their business growth. Decoupling can be achieved through development of cleaner technologies, innovations, productivity and efficiency gains (Schandl *et al.* 2015).

7.8. Competitive Advantages



Climate change mitigation might also enhance companies' competitive advantage by enhancing their reputation to shareholders, customers and other stakeholders (e.g., employees and regulators). Due to these social pressures, emissions disclosures allow companies to demonstrate to their stakeholders that they are undertaking appropriate approaches and adopting practices to tackle climate change. Reporting on climate change makes companies accountable to their stakeholders, thus building confidence and credibility, which helps to protect the company's reputation.

> Real or not, climate change remains an issue for businesses and governments everywhere. For Mainfreight, it begins with accepting that our business is based on an activity that generates carbon emissions and therefore taking responsibility to reduce those emissions over time while maintaining our competitiveness and ability to deliver quality services as our customers expect (Mainfreight, AR 2012, p. 26).

Companies expect to increase their competitiveness as a result of climate change through innovation or compensation (Kolk & Pinse 2004). Companies that emphasise innovation strategies improve their competencies as a result of the development of new environmental technologies, more friendly environmental operations and manufacturing processes, and lower emissions products and services. In the course of pursuing corporate social responsibility initiatives, some companies could develop innovative products and services that are beneficial to the company's profitability. Improvements in

manufacturing processes frequently encompass reduction in energy consumption (or achieve higher energy efficiency). Companies can also utilise options to increase their capabilities and explore new product and markets. Innovation is different from compensation. Instead of participating in the innovation process themselves, comapnies could seek solutions through compensation to either replacement of high emission with low emissions materials and manufacturing process or outsourcing high emissions activities elsewhere in the supply chain (Kolk & Pinkse 2004).

> Sustainability is key when it comes to Spark driving innovation in New Zealand. Spark believes sustainable business practices mean a greater competitive advantage in the long term (Spark SR 2016, p. 6).

> Sustainability and climate change, in particular, have a major influence on research, innovation and product development across Fletcher Building. A number of our businesses are developing new products and solutions to further meet emerging customer preferences in areas of environmental sustainability (Fletcher Building AR 2013, p. 29).

Climate change is challenging and transforming traditional business models to evolve a low-carbon model to avert dangerous impacts is difficult. Osterwalder and Pigneur (2010) note that a business model refers to the rationale of how an organisation creates, delivers and captures value (economic, social, cultural and other forms of value). Business models can be a subject of innovation by pursuing novel forms of value creation and carbon capturing mechanisms, and therefore represent a source of competitive advantage (Casadesus-Masanell & Ricart 2010). However, businesses face the uncertainty of regulatory requirements, lack of data and financial incentives and lack awareness of green technologies (Zhao *et al.* 2016).

Carbon-intensive companies need to align their business models and investments with the climate goals of the Paris Accord. Nevertheless, it is hard to evaluate to what extent a change in business model by these companies will contribute to mitigating climate

change impact and to what extent these companies need to act if New Zealand's Government does not force them to act on climate change. There is a lack of legal responsibility to align their corporate strategy and investment decisions to climate targets. To meet the Paris Agreement, they understand they need to phase out oil and gas production, find alternative sources of energy for their manufacturing processes and change the nature of some of the products they make.

> It depends on what you mean by growing. That is the question. I suspect we can't sell more fossil fuel. Fossil fuel may have been diverted to other energy areas. And there is definitely productivity gain as well they can be achieved. So it could reduce the emissions intensity alongside doing these activities (Oil and Gas A, Interview 1).

> To me, the main challenge is that to really make the reduction in carbon emissions, we actually need to change the nature of some of our manufacturing processes and also the fuel by which manufacturing processes have been driven. It would be a New Zealand-wide challenge that there is not always a low carbon alternative in the manufacturing process and not always low carbon alternative products **(**Construction A, Interview 1).

Outsourcing pollution allows organisations' efforts in reducing emissions to look more impressive. These companies have effectively outsourced their carbon emissions overseas by importing materials and other goods from factories in other countries, rather than producing domestically. This is a significant problem, we are not making as much global emissions progress as we could. In fact, under the Paris Agreement, countries are held responsible only for the emissions produced within their own borders.

> In terms of business strategy, we may end up just changing the nature of some of the products we use, for example, a product that does the same job in building that may not be made of the same material. There is the manufacturing plant somewhere offshore, so even if we change the way that is produced for us, that does not necessarily mean we've contributed to New Zealand's carbon footprints as we do not make it here (Construction A, Interview 1).

7.9. Conclusion

The rationales for climate change mitigation are principally related to the business case, regulatory compliance, social responsibility, competitive advantage, public relations and a balancing act. Under the business case logic, climate change is linked with a win-win situation which emphasises improvement to a company's bottom line while at the same time reducing its contribution to environmental problems. Companies, however, mostly focus on low-hanging fruit solutions such as an improvement in energy efficiency, as 'reducing' emissions in such a way are relatively easy to accomplish. Through the concept of eco-efficiencies, organisations are able to grow while also appearing to be green, which reveals a tension of meaningful engagement with the climate change issue. Some companies have also developed innovative products and services in the course of pursuing corporate social responsibility initiatives in order to improve their competencies. Others choose to carry out activities and retain sources of high emissions elsewhere in the supply chain which indicates the lack of truly integrated climate change concerns into their environmental management system. This opens up questions of actual commitment by corporations to limit their emissions and what must be done to meet the planetary boundaries.

Another motivation for reducing emissions is social responsibility. This is reflected in a company's actions where they are concerned, or least expouse a concern, with the moral imperative to act beyond simply fulfilling a financial goal. Climate change mitigation is considered "the right thing to do", as they are a responsible corporate citizen and member of the community. The creation of a designated responsibility within the organisation to deal with climate change issue could be seen as supported by leaders of organisations. However, the fact is that many struggle to get other members within the organisation on board, thus making it difficult to effect changes in corporate operations.

With the growing concern of society and increasing regulatory pressures about climate change issues in recent years, companies need to improve their reputation with stakeholders by demonstrating their responsibility and voluntarily disclosing information about their climate change initiatives. Representatives of companies in the sample spoke of the need for compliance, and under the Emissions Trading Scheme, their obligation is to report and to surrender carbon units underneath the ETS. Some other companies prefer to maintain their wait-and-see approach, hoping they can maintain their legitimacy until there is a clearer indication of political commitments and stakeholders' demands. Given the high level of uncertainty concerning climate change policy responses, some companies have joined environmental associations to improve their reputation and enhance their competitive advantage. The next chapter will focus on the details of actual corporate practice in setting climate change targets.

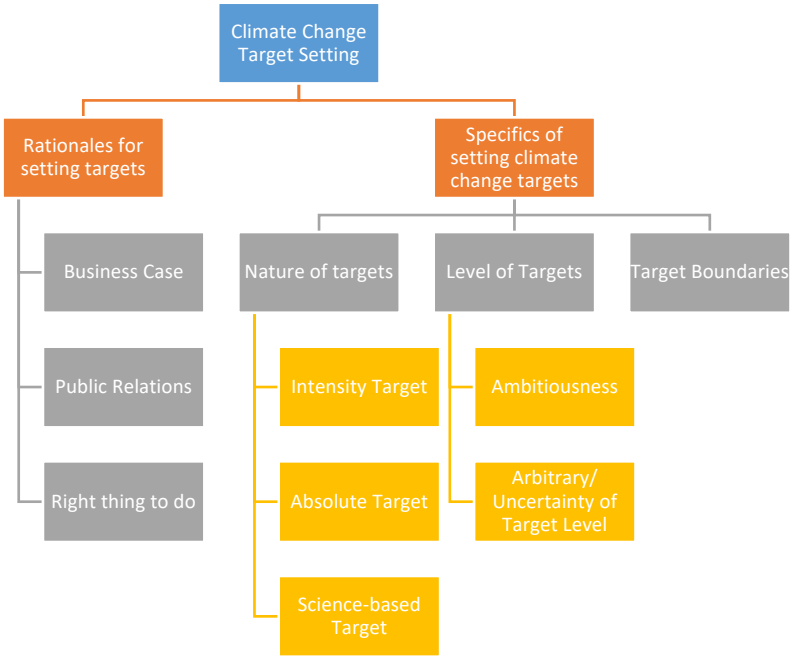
CHAPTER 8 – CORPORATE CLIMATE TARGET SETTING

8.1. Introduction

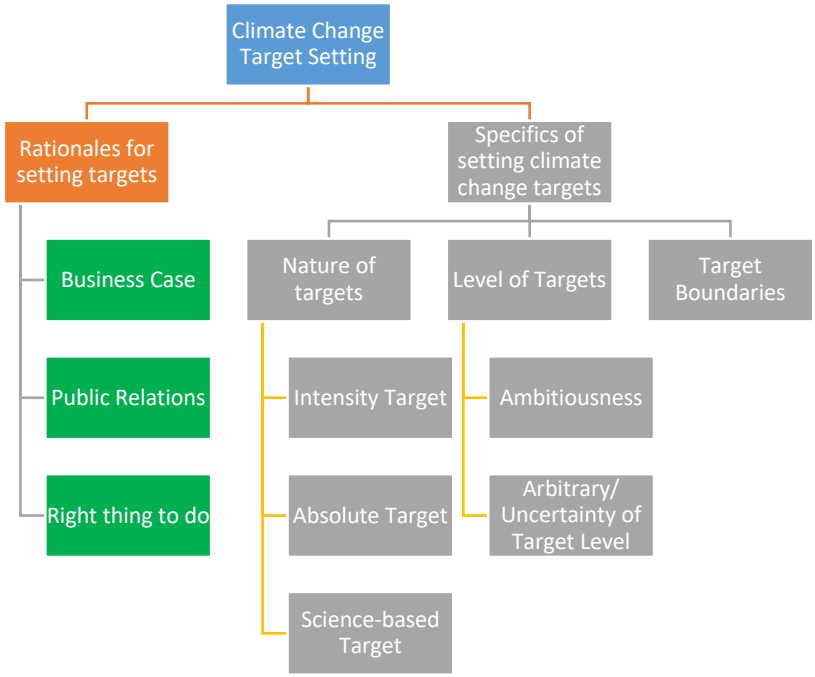
Having discussed the rationales for corporate climate change mitigation in the previous chapter, this chapter discusses the rationales for New Zealand companies to set climate change targets and their practices of setting these targets, including for a few, ultimately science-based target setting. Two research questions that this study sets out to address are, first, "are corporate emissions reduction targets consistent with the internationally-agreed upon target for limiting global warming to two degrees?" and second, from a managerial perspective "what are organisations willing to do and not willing to do in regards to emissions reduction target setting?". This chapter draws upon 29 interviews with representatives from 23 firms (14 climate reporters and four non-reporters in the sample and five science-based targets approved/committed companies that were not in the NZX 50 sample).

The chapter provides insights into the organisational constitution of rationales for corporate climate target setting. It focuses on themes that are prominent and/or have an effect on operations such as being a driving force to decision making (business case), managing public relations and doing the right thing. Analyses and discussion of the specifics of corporate target setting follows, with consideration of the nature of targets, the level of targets (how ambitious targets are) and target boundaries (scope coverage). The outline of this chapter is graphically presented in Figure 27.

Figure 27: Rationales and Specifics of Corporate Target Setting



8.2. Rationales for Setting Climate Change Target



8.2.1. Business Case

Unsurprisingly, "decision-making" is the most dominant representation constituted throughout the interviews. The long-term nature of targets provides a clear direction and focus that can offer companies insight into reducing their emissions.

> A target is a bit like navigating to a distant location. If you do not have targets on the way, you are not going to get it (Real Estate A, Interview 1).

It is essential to drive their action because companies need targets to measure against their performance. In order to establish a clear trajectory for their business, they need to establish targets reflecting an ambitious level of emissions reduction to work towards.

> At the moment, the science-based target really shows us the scale of changes needed, and the ambition level of what we need to do. A science-based target that really helps show us how strong we need to be in our carbon reduction (Transportations and Logistics A, Interview 1).

> And from our internal perspective, it enables a clear pathway, so there is a job to set the target and the second job is to understand how you are going to achieve that target. So target setting is not just setting the international goal on its own, you‘ve got to work to see whether the target is achievable and if its currently not achievable, you need to know how you are going to get there. You should think about how you actually get there (Utilities B, Interview 1).

A climate-change target, therefore, is to inform companies' strategic decision-making. With the transition to a carbon-constrained economy underway, companies are aligning their strategies to open themselves up to world opportunities. Setting climate-related targets enables companies to remain operationally efficient and build resilience against a future uncertainty where fossil fuels will become increasingly scarce and prices are likely to be expensive. Climate-related targets also drive the development of new products, adoption of new manufacturing processes and also inform investment decisions because actions to reduce emissions could drive direct operational cost savings. In addition, targets can help companies understand future market trends, which can allow business to shift their focus towards innovative solutions and new opportunities.

> We can start to work out what are the programmes and what are the investments that we are going to make at an individual asset level to deliver this performance. So the goal, the annual (emissions) reduction goals are really critical (Real Estate A, Interview 1).

> And in managing emissions, the targets themselves become the management tool because they give businesses something to aim for. And they will need to be able to

> develop a production strategy in the pathway as well in order to be able to achieve those targets (Construction A, Interview 2).

8.2.2. Public Relations

Another common theme in relation to organisational rationales for setting targets is to provide credibility to stakeholders. Setting an emissions reduction target allows businesses to demonstrate their serious commitment to tackling climate change to their stakeholders. Investors are requesting that companies report their social and environmental policies and performance data which are utilised as benchmarks of business credibility for their future investments. Consumers' behaviours have changed towards more ethical and environmental consumption as consumers are becoming increasingly aware of the effects of their choices on the environment. The New Zealand Government continues to work on compliance with the Paris Accord, companies are expected to face escalating regulatory pressures to comply with global and national climate policies (e.g., emissions trading scheme policies) and to curb emissions-intensive activities. Business' climate-related costs are likely to escalate due to increases in carbon price.

Setting climate targets allows businesses to prove themselves to be forward-thinking, increase their resilience against upcoming regulation, and also improve their reputation for sustainability, which are of significant importance. Without reporting, stakeholders might take a poor view of companies that do not do their share to reduce emissions and enhance sustainability.

> We set an ambitious target so that our marketing, investor relationships and social contracts can all be managed. If we fail to have it, obviously, we do not have those three as well. We know that we should not set it too hard, otherwise, it will come back and cause us problems. We do not want to set it too easy, doing work for nothing. That is why it is important for us to set the right target (Agriculture A, Interview 2).

> The target we set has credibility in the eyes of our stakeholders. So when we say we set a target, yes, any business can set a target but again the level of validation from the global movement perspective is in line with the Paris Agreement. It is significant for your stakeholders in terms of giving them the credibility and security that we are on the right track. It is one of the ways to manage our risks around the perception that we are not going to do the right thing (Utilities B, Interview 1).

Targets are utilised by companies to communicate their commitment to long-term sustainable growth to their stakeholders. The targets provide a clear signal to stakeholders that they are sustainably-minded organisations and avoid the noise of corporate reporting. Environmental commitment might not be reflected in concrete action on environmental issues, however.

There is also an upward trend towards companies that have set climate-target encouraging and requiring their major suppliers to set the emissions targets and measure their own emissions. By doing these, companies seek to reduce their indirect impacts through their supply chain, therefore, reducing risks. It not only motivates other companies to commit to reducing emissions but also helps ensure that the companies will survive.

> Setting our target and telling the public about the target is not just about changing office behaviour internally in our organisation but also working with suppliers and partners to reduce their emissions over time (Oil and Gas A, Interview 1).

Setting a climate-related target could help companies achieve the ambition of sustainable leadership which shows that they are industry leaders and thereby improve corporate reputation. Indeed, as an attempt to demonstrate leadership as a key motive, target setting indicates a proactive approach in which an early start on climate change is often utilised.

> Setting an ambitious long-term target such as the 2030 target we set establishes a clear trajectory for the business to work towards and sends a clear message that things will need to change. Also, it helps us with our position as a climate leader (Utilities A, Interview 1).

8.2.3. Right thing to do

A quite common pattern of response in setting a climate science-based target is the moral case for action – doing the right thing. These targets should not base upon what is easy to do for business. Instead, these targets must be based on the fair-share of each company to address climate change.

> I think (setting a climate target) is the right thing to do. What I see is the responsibility of our organisation to align with the one internationally agreed methodology of setting science-based targets. It allows companies to set and maintain and try to meet the IPCC 1.5 degrees target (Healthcare A, Interview 1).

> A lot of other companies, especially Climate Leaders Coalition companies, are going to set science-based targets. And that makes the most sense to me as an individual because at the end of the day, that is what you are trying to do. You are trying to get the world to not increase more than 1.5 degrees; that is a very optimistic target and how the trajectory should look. They do think that it makes a lot of sense. So that science-based target is something that we will be looking at for sure (Utilities D, Interview 1).

It is doing the right thing to increase the quality and relevance of corporate goal-setting. However, the effort of setting a science-based target is perhaps necessary but not sufficient. Considerable political and market uncertainty at the moment are factors that pull companies back from a low-emission economic transition. Instead, many businesses are adopting a wait-and-see approach before making big decisions (Rietbergen & Blok 2013). A science-based target perhaps might be a rhetorical commitment without actually being backed up by empirical improvement. It may only provide a cover for inadequate business action on climate change. This reveals that perhaps far more business' actions are aligned with their science-based targets commitment.

> A target is in the future. We don't yet know exactly how can we get there as we rely on technology changes to help us to get to that point. It is a way of some degrees of reliance on technologies breakout and that depends on which sector that you are in (Utilities D, Interview 1).

A long-term emissions reduction target allow companies to be more flexible in waiting for new technological developments and other options for mitigation. It again demonstrates a business case which has underlying tensions between demands of radical decarbonisation and business imperatives (i.e., profit and shareholder value gain). Additionally, companies need time working out what targets they should set and what their contribution should be. More importantly, some companies/industries are not going to do anything to reduce their impact, whether fossil fuel holds-outs or technologically stuck sectors (e.g., agriculture and aviation).

In contrast, some companies have not set climate-related targets. The reason for choosing this wait-and-see approach is they see that there are several factors that influence future emissions, such as business growth, regulatory changes and development of renewable energy and technologies.

For example, in the cases of energy companies, uncertainty about factors of the unpredictability of demand from customers, from other energy companies, the unpredictability of weather and nature otherwise make it difficult for companies to anticipate their future emissions growth and to set emissions reduction targets. These context-specific factors influencing a company's choice about an appropriate target make the target setting process even more complicated. They adopt the wait-and-see approach, for example, once the new wind farm has been developed, which will substantially reduce their emissions. In doing so, the pathway to reducing their emissions might be more realistic and they can be more certain that their emissions reduction is likely to be met.

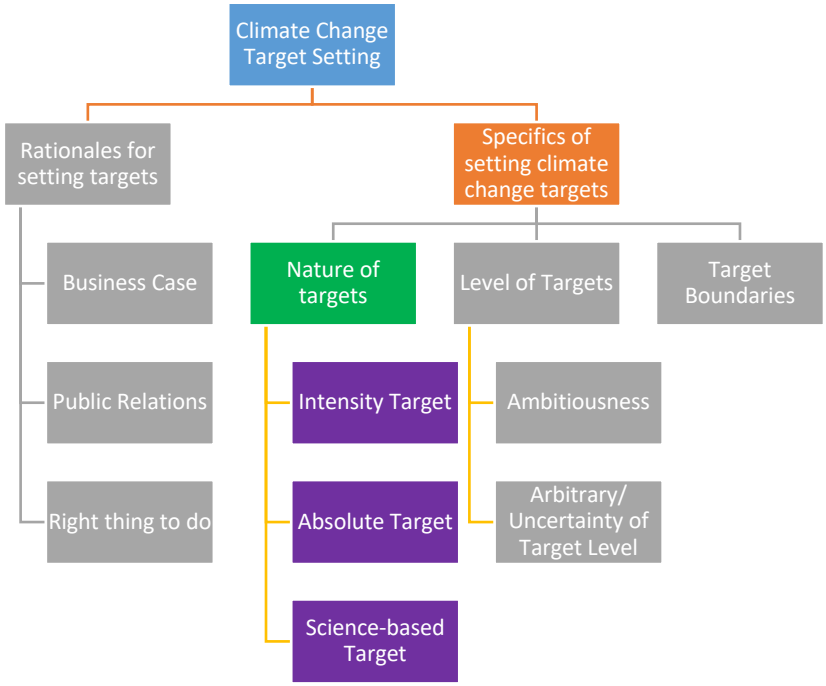
> So I say we have not (set climate targets) yet. It does not mean we are not going to. The challenge for us around Scope 1 emissions-electricity generation emissions is the unpredictability of demand, from other customers, from industry players as an energy company, and the unpredictable nature of even the weather. We will be setting a target at some points. What it is and what it looks like remains to be seen. We are aware of it becoming a requirement and we want to make sure that whatever we do, it makes sense for us and for the industry as a whole (Utilities D, Interview 1).

> When we are looking at emissions, it is actually now that we've got to go ahead with the …wind farm. What we could say is that we are actually looking at reducing our emissions intensity because we know … the building will start this year. And it will be completed by the end of next year so the emissions that are associated with our total generation will actually decrease. So we could say because we are investing in renewable generation development then that will bring our emissions intensity down. So I think that is kind of a more realistic and acceptable approach (Utilities C, Interview 1).

8.3. Specifics of Setting Climate Change Target

Companies can make a range of choices in deciding what kind of target to implement. There is a large variation in the nature of the target (absolute target, efficiency target or science-based target), the level of target and target coverage (emissions scopes).

8.3.1. Nature of Targets



In this section, we examine the selection of the types of emissions reduction targets companies would explore when setting their targets. Three categories emerged within the corporate reports and during interviews: Efficiency/intensity targets; absolute targets and science-based targets. Efficiency/Intensity essentially means doing more with less, i.e.,

creating additional value to meet customers' needs while maintaining or reducing environmental impacts. Absolute targets use the concept of SMART, where targets must be Specific, Measurable, Appropriate, Realistic and Timed (Edvardsson & Hansson 2005). However, the absolute target is not sufficient if it does not help the organisations measure their environmental impacts against the scientifically set standard. If companies are serious they should, therefore, arguably adopt a science-based target, which is one in alignment with the level of decarbonisation required to limit global warming less than 2^{o}C compared to pre-industrial temperatures.

8.3.1.1. Efficiency Target/Intensity Target

> 2020 goal of reducing our environmental footprint by 20 per cent per passenger (Auckland International Airport SR 2016, p. 4).

A number of companies have decided to adopt an intensity target (also called a relative target or eco-efficiency target) that relates to the companies' efficient use of natural capital. The eco-efficiency concept has been developed by business for business. It was designed by the World Business Council for Sustainable Development, a group of 48 industrial companies whose opinions contributed to the Earth Summit (McDonough & Braungart 2002). Eco-Efficiency is "usually calculated as the economic value added by a firm in relation to its aggregated ecological impact" (Dyllick & Hockerts 2002, p. 136).

One important aspect of eco-efficiency in practice is doing more with less. Reducing waste, using less energy and raw material resources is obviously good for the environment and also corporate bottom lines. Allowing continuous company growth and business expansion is a clear advantage of a relative target.

> The intensity target is a quite interesting one because they do allow for growth. You can increase your production but at the same time you can reduce your intensity (Utilities C, Interview 1).

Achieving an efficiency target does not ensure an absolute reduction of corporate GHG emissions. It perhaps enables companies to continue their business-as-usual practices. A relative target does not necessarily require a company to put extra effort into reducing emisisons. This type of target does not have any meaning from an ecological system perspective:

> We always shy away from an intensity target because it does not mean anything. With an intensity target, it is nice to have a look at that but with the intensity target, you can grow as big as you want. It does not mean anything from an overall system perspective (Tourism A, Interview 1).

8.3.1.2. Absolute Target

When considered from the ecological perspective, an absolute approach is a good way to ensure a real reduction of emissions and make a contribution to climate change mitigation. The absolute target is set using a specific performance baseline, intended target timeframe and requires a calculation of GHG emissions data. For example:

> We are a member of the International Air Transport Association and have committed to its targets on carbon emissions, being a reduction of 50% in net emissions by 2050 compared to 2005 levels (Air New Zealand SR 2015, p. 16).

An absolute target is obviously a better way to manage emissions as compared to an efficiency target/intensity target because (1) the global GHG reduction target which is to limit the global warming to below 2^{o}C is an absolute target (i.e., constrain our CO_2 emissions to no more than 1000 Gt CO_2 or reduce the current emissions level to 41% to 72% by 2050) and (2) improving an intensity ratio does not necessarily reflect environmental performance improvement. Indeed, an absolute target is used in various types of policy, such as emission trading schemes and voluntary agreement schemes. It is therefore of higher certainty, for the company with an absolute target playing a part in helping the Government meet their commitment (Rietbergen & Blok 2010).

> We try to build ourselves on an absolute target, obviously on the global level, we do not work on an intensity basis as we do not have another Earth. So we have to work on an absolute (Real Estate A, Interview 1).

> Basically, if we want to address staying within the 1.5 degrees limit, we have to have an absolute target because the atmosphere does not see an intensity target (Sustainability Consultancy A, Interview 1).

> An absolute target is generally the hardest one to achieve because that means you have to make absolute reductions in your GHG emissions. And there is always going to be a bit of conflict between business growth and absolute reduction (Utilities C, Interview 1).

Absolute targets require more effort made by the companies than intensity targets. The drawback is that companies might miss seeing opportunities for energy efficiency and GHG emissions reductions with very specific targets. Another drawback is that very specific targets might be less relevant for overall corporate policy or strategy (Rietbergen & Blok 2010).

More importantly, to prevent the worst consequences of climate change and also an acceleration of skills and expertise towards the low-carbon economy, companies should understand their fair-share in terms of contributions necessary to meet the global emissions target. Therefore, their targets should be scientifically understood and pursued. The science-based target and challenges in setting them will be discussed in the following subsection.

8.3.1.3. The Science-based Target

> During FY16, we reviewed our current emissions targets, replacing them with ambitious, 'science-based' targets of a reduction (on FY15) of 10.0% by 2020 and 32.0% by 2030. A science-based target is one that provides the level of emissions reductions necessary to keep the global temperature increase below 2°C by 2050 – the level at which the most significant impacts of climate change would be mitigated. This is the level nations internationally committed to at the 2015 United Nations Climate Change Conference, COP 21 (Warehouse Group, AR 2016).

Six New Zealand companies set science-based targets (thinkstep, Enviro-Mark Solutions, Auckland International Airport, Contact Energy, New Zealand Post and SkyCity Entertainment). Five other companies (the Warehouse Group, Synlait, Fletcher Building, Kiwi Property and Port of Auckland) have committed to setting science-based targets. The International Panel on Climate Change (IPCC AR5) specifies that targets adopted by companies to reduce GHG emissions are considered science-based if they are in line with the level of decarbonisation required to limit global average temperature rise to less than 2^{o}C, compared to pre-industrial temperatures. The Science-based GHG reduction target developed by the Science-Based Targets Initiatives, a joint effort by the CDP, the United Nations Global Compact (UNGC), World Wildlife Fund (WWF) and the World Resources Initiatives (WRI) is most commonly known because it has provided various best practice guidelines and online calculation tools to help companies in setting their own science-based GHG reduction targets to support a transition to a low carbon economy and keep the planet below a 2^{o}C temperature rise. Hence, these science-based targets are not based upon what is easy to do but instead are based on a company's fair share in tackling climate change.

The term "science-based" is put in quotation marks by the Warehouse Group (2016) which can change its meaning. In the Oxford dictionary (2004), a quotation mark is used either to mark the beginning and end of a title or quotation or to indicate slang or jargon words. In this context, "science-based" may have a rather difficult meaning for others to understand. As they demonstrated, it is ambitious emissions reductions targets that ensure that the transformation action they take is in line with current climate science. However, methods to assist them with setting science-based targets remain absent. It is difficult to see the expertise and rigour applied to building international scientific consensus, combining it with a transparent approach to allocate a fair share of reductions to the

company. Furthermore, the Warehouse Group did not commit to taking science-based climate action until May 2018 (Science-based Target Initiatives 2018). Without a credible demonstration of its fair share in efforts to achieve the ambitions of the Paris Accord, it is insufficient to claim their corporate emissions reductions target is science-based.

Many companies have not set science-based targets even though they acknowledged their performance is measured against science-based targets. The question is, what evidence could they provide that they have achieved "twice the level required to achieve science-based targets"?

> Spark New Zealand is committed to reducing our impact on the environment and has proven success in reducing GHG emissions over the long term. Since FY06, emissions have reduced, on average, by 6.5% per annum (CAGR) -- around twice the level required to achieve science-based targets. (Spark SR 2015, p.9).

Many companies have shown their support of a science-based target as it is an effective one. Adopting science-based targets could demonstrate a credible and robust commitment to climate change mitigation. It also demonstrates leadership, giving them the advantage of a head start in the transition to a carbon-constraint world.

> In our programme, if it is an effective target, it is an absolute, science-based target. It is signed off by top management. They report progress back up to the top management. That is how we make it effective. And if you want to make it really effective, you just put the financial incentive to the CEO or the director to deliver this reduction (Sustainability Consultancy A, Interview 1).

> I think effective target setting ... has to be realistic for your organisation and also meaningful. A lot of organisations are kind of setting science-based targets but I think organisations need to take a step back and ask what does it actually mean for my organisation, my stakeholders? (Utilities C, Interview 1).

The fact that having a target offers a compelling mechanism for driving change in corporate environmental performance, some companies might appear to be wary of setting an emissions reduction target that they might not know they can achieve. In the

energy company case, without a firm target, they appear to know with certainty that their emissions will decrease over time.

> And I think, from our perspective, we have not yet set a target. But once (a renewable generation facility) is built, it makes sense for us to set the realistic emissions intensity reduction target that is in line with that development over the next five to ten years (Utilities C, Interview 1).

Despite the effectiveness of science-based targets that provide companies with a clear and meaningful route to reduce greenhouse gas emissions, some companies might feel reluctant in committing to science-based targets that are set based on the planetary boundary principle. Indeed, once they set science-based targets, some carbon-intensive companies might move towards a radically different logic/business model that requires them to eliminate most emissions. These choices are considered as the most difficult. Some reasons have been revealed during interviews:

First, for most of the carbon-intensive companies, it is difficult for them to meet the science-based target. They do not yet have a clear idea of how to achieve them. It is obvious that companies prefer to set their own targets that they can control, rather than setting a science-based target and being reproached for not doing enough.

> We will make our science-based target around a part of our emissions profile but the whole profile makes it too difficult (to achieve a science-based target) (Utilities A, Interview 1).

> For example, with the fuel company, in New Zealand, the science-based target is pretty hard for the emissions. The energy company (needs) a different asset, a different approach, and different services to customers. We need to change the business model. And in order to change the business model, you have to have different types of energy (Oil and Gas A, Interview 1).

> I think methane and Nitrous Oxide are heavily related to producing food. We cannot just stop producing food. We still need to feed a global population and that is one of our challenges (Agriculture A, Interview 2).

Due to the legitimising role of the climate change target, a negative impact on reputation might occur if a company cannot meet the target. Setting a science-based target is a rather risky practice that rests on many strategic decisions. It is an actual challenge for companies to set a target that is both ambitious enough to make a meaningful contribution to climate mitigation and still attainable within the proposed time frame. Companies must learn to align their business practices with climate mitigation. Companies also need to prepare an implementation cost strategy that details financial plans for implementing and ultimately achieving targets. For example, in the oil and gas sector, a technical paper designed to set a science-based target has not yet been developed. Therefore, the Science Based Targets Initiative is unable to validate their emissions reduction targets for companies.

Second, the agriculture sector is not included in the SBTi manual, which provides guidance on setting SBTs. In addition, while capturing Scope 3 emissions is difficult, managing them is even more challenging. While companies have developed programs meant to help farmers reduce their emissions, ultimately, they have relatively little control over their agricultural partners, and therefore, limited ability to ensure that they meet their Scope 3 targets.

> It is not an easy thing for us to tell our farmers to farm smarter because we have to give them a little bit more guidance for them to do that. At the same time, if we give them too much guidance but it does not actually work out, then it is an issue for us in terms of whether we can help our farmers. And then there is on-going improvement through cow breeding but that takes time and there are multiple objectives when you select your new cows, you want cows to deliver profit by producing productive milk and sometimes it is in line with reducing emissions but not always so there is are lot of competing objectives (Agriculture A, Interview 2).

Lack of time, financial resources and understanding are other reasons to ensure the process of setting science-based targets is undertaken thoroughly. The process of setting the right target can be complicated. Even in big companies with highly trained people in

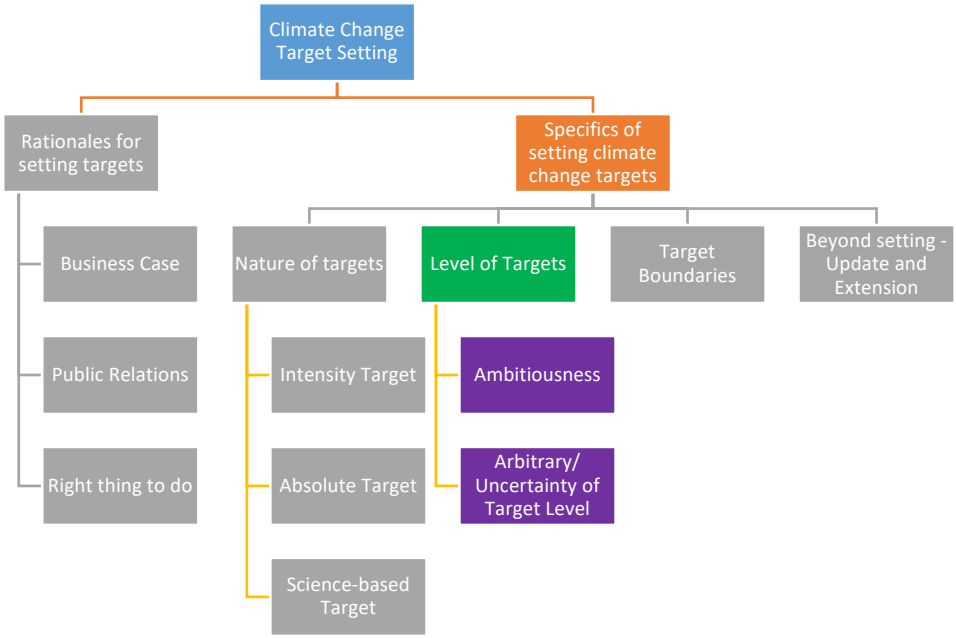
corporate social responsibility departments, seeking external support to break down all the available information is necessary:

> We are looking at a science-based target. Science-based targets will give us a clear indication of what we need to do. We have a carbon management programme but we do not really know what we need to do towards meeting the global target of 2 degrees centigrade. We will probably set a science-based target in the next five to ten years (Textile A, Interview 1).

Climate change creates uncertainty because the cost and positive impact of any responsive initiative on the company's financial performance are not certain. The companies, therefore, can imitate similar organisations in the field, with target setting that is worth adopting and also reduce the uncertainty or complexities of doing so.

> British Telecommunication talks about the three-for-one strategy that obviously includes customers, that by providing/selling their products, they are saving customers' emissions (Scope 3 emissions). We will see if we need to expand the emissions scope by looking at how to measure and the potential to achieve the targets. At the moment, we are trying to keep the same Scope 1, 2 and a part of Scope 3 emissions (Telecommunication B, Interview 1).

8.3.2. Level of Targets



Apart from the nature of targets, companies also need to make a choice in regard to how ambitious the target level has been set.

8.3.2.1. Ambitious level of Target

Setting ambitious targets to reduce corporate climate change impact has been the main way companies show the public their commitment to helping solve the climate change issue. However, a widely accepted definition of ambitious corporate emissions reductions targets does not seem to exist. This term is unquestionably ambiguous.

> I think that was set as an ambitious target. I don't think it is based on the science-based target. The decision made was based on our opportunities to reduce emissions and as much as increasing the (operational) efficiency. (Oil and Gas A, Interview 1).

> There was not a scientific reason behind the target we set. It was a mixture of ambitiousness and reality, going back to about three years ago when set it (Telecommunication B, Interview 1).

In my study, an ambitious corporate GHG target was considered set if it was aligned with science-based climate targets. However, target achievement is not necessarily certain because it requires that companies put considerable effort beyond business-as-usual practices, adoption of the best available techniques while maintaining economic and financial benefits for companies and its shareholders. However, it is often noted that clear and feasible pathways to achieving science-based targets in high emissions companies are not determined. Achieving science-based targets always involves offsetting by purchasing carbon credits.

> We set a science-based target which is committed to the 2^{o}C global warming as approved by the Science-based Target Initiative. The question is how we can meet the targets that we already addressed. It is absolutely our corporate strategy to reduce first and then look at offsetting and we also acknowledge that we have a role to play in the broader operation of the environment of travel, trading and tourism (Transportations and Logistics B, Interview 1).

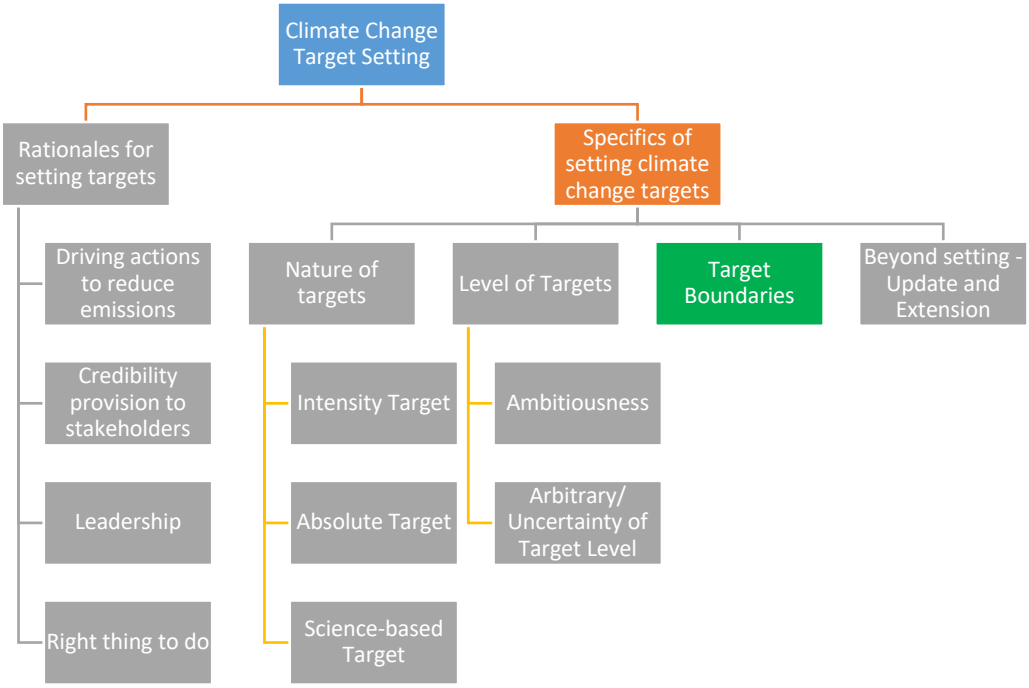
8.3.2.2. Arbitrary/ Uncertainty of the Target Level

The determination of the level of target set rests on some highly sensitive factors such as climate change policies and regulations or the nature of business operations as well as the anticipation of business growth. Pinkse and Kolk (2009) noted that the level of target depends on emissions at the baseline year to compare with current emissions, timeframe in achieving targets and how fast emissions would rise under a business-as-usual scenario. Without setting science-based targets, uncertainty remains in formulating climate-related targets, which then result in an arbitrary target. Further, some companies choose to set a target with a short duration (three to five years, for example) as it can be quickly adapted to new activities and is an easy way to show stakeholders a commitment that can be achieved on a regular basis. Other companies choose a long-term target (e.g., ten years) which gives flexibility in waiting for what new technological developments might bring in terms of mitigation options.

> We estimate what we could achieve now and then we double or triple that target and set a ten-year timeframe to put pressure on ourselves to analyse innovation credibility to attain the goal. We did that, we are really confident we will reach our goals (Agriculture B, Interview 1).

> What we did when we set those was to look at what is needed based on staying under 2^{o}C at the time and what is going to be needed by 2030. But then, we take a ten- year path because that is a nice stretch of years and then we look at where we should be able to get to in 2030 and calculate backwards and round it up so it is not a highly scientific process but we set ourselves a stretch goal which is going to be hard to achieve (Tourism A, Interview 1).

8.3.3. Target Boundaries



Another choice in deciding the type of target is setting the boundaries of the targets, which might include supply chain analysis and lifecycle analysis. There are two different boundaries to consider: organizational and operational. Organizational boundaries indicate the horizontally set boundaries, those set along with the corporate ownership including companies' subsidiaries, franchises. Emissions could be decided based on the proportion of their equity share or financial control. Operational boundaries could also refer to vertically set boundaries. This involves the supply chain and lifecycle of products and services, including direct emissions (Scope 1 emissions), indirect emissions (Scope 2 emissions – electricity purchase) and other indirect emissions measured upstream and downstream from operations, beyond operational boundaries and in the products and services developed and sold (Scope 3 emissions) (Matthews *et al* 2008, Antonini & Larrinaga 2017). All of the companies setting climate-related targets in the sample have selected operational boundaries which involve identifying, measuring and categorising emissions associated with operations in direct and indirect emissions.

For some carbon-intensive companies, it is obvious that they focus on emissions generated by their own production and operation activities:

> The target for us will have to be focusing on predominantly Scope 1 because that is the most material proportion of our emissions footprints, 99% (Utilities C, Interview 1).

It is sensible for the high carbon-intensive company to first aim for a reduction of direct emissions before looking any further throughout the supply chain, as those emissions might somehow remain uncontrollable. Other companies stretch the scope of targets beyond their direct control that they can be seen as bearing greater responsibility:

> So Scope 3 emissions are especially what we have so far included in our customer journey. The emissions that customers renting our campervans create by the kilometres that they drive. It is actually the most substantial material impact that we have as a company on emissions because they drive a lot of kilometres in those campervans, and currently, 49% of them are diesel. Without our customer's journey, we couldn't be a company. That is why we feel like we have to take responsibility for that (Tourism A, Interview 1).

Nevertheless, in some cases the use of the product leads to very high emissions, such as oil companies. It is not surprising that the target they adopted has not fully included their indirect emissions. They tend to pick which activities to include in a piecemeal way based on the ease of data capture or relevance to their degree of control.

> Most of the target is based on the operational footprint, not wide on the supply chain. It has some elements of Scope 3 covered. Those things are beyond our organisation's main control at the moment. It is not included in the target but they could be potentially a large component in producing emissions. We don't cover all of Scope 3. It is not expected that the target will be achieved by all Scope 3 (Oil and Gas A, Interview 1).

The CDP (2018) notes that 100 out of 400 companies that have joined the Science-based Targets Initiative already have approved targets, which in line with climate science. Approximately ninety percent of these companies have Scope 3 targets which include all indirect upstream and downstream emissions that occur in the value chain of the

company. However, Temperature Score (2019) reports that over a third of the world's 200 largest companies do not fully disclose their greenhouse gas emissions, revealing a lack of transparency from companies across all market sectors.

> We do not report on Scope 3 emissions or almost all Scope 3 emissions. And we report on Scope 1 and 2 on a yearly basis (Real Estate C, Interview 2).

> We know that without our current Scope emissions with ISO 14064, once we extend our Scope 3 to report everything in our supply chain, it would probably be at least double if not more of our total footprint. So normally, and in sustainability terms, we talk about maybe eighty percent of our environmental impact is hidden from the supply chain. So the challenge is always how you can identify what is hidden in the environmental impact (Healthcare A, Interview 1).

> The fact is that roughly ninety to ninety-five percent of our emissions are Scope 3, and they are not directly caused by us. All of our heavy truck fleets, et cetera are contracted out so we don't own the truck, we don't employ the drivers. We don't own the plane, we don't employ the pilot. These people like Air NZ get the specific point of it and so we can only influence, we can't control those emissions (Transportation and Logistics A, Interview 1).

Underestimating emissions may mislead on the full carbon impact of companies' activities.

> The main problem is underestimating our emissions reduction. Monitoring every project for known and unknown environmental benefits is the greatest challenge. Overestimating our emissions is not a problem given the governance and reporting requirements imposed on us by our environmental reporting partners E-MS (Retail A, Interview 1).

In fact, none of the many regulatory or voluntary accounting and reporting programmes requires Scope 3 accounting and reporting (ACCA 2019). There are some understandable reasons why Scope 3 information from upstream and downstream operations beyond operational boundaries are incomplete. First, there is evidence of gathering and quality difficulties.

> The most challenging part is working out the Scope 3 emissions. It is the new standard now with nearly 15 different Scope 3 measures and this is not good data for Scope 3. So now they have to measure GHG emissions associated with anything that they purchase and sell (Sustainability Consultancy A, Interview 1).

> At the moment, the biggest challenge in terms of measuring is to attain good data from our suppliers. So, as we have less direct, influence or control, we find it harder to get carbon data from our suppliers. Some of that is because of the level of awareness of those suppliers, so we find that a lot of those suppliers don't automatically offer us the carbon impact data of the services that they provide such as airfreight, or sea freight (Healthcare A, Interview 1).

> A lot of people do not know what Scope 1, Scope 2 and Scope 3 mean. A lot of people do not know if you report your emissions, how significant they are in the context of what we are doing. So making meaning out of the data we are putting out there is difficult (Utilities B, Interview 1).

> There are a lot of emissions which are indirect as well as direct. Most of our emissions are called Scope 3, which are upstream emissions in the purchase of supply fuel and therefore it is quite complicated to get direct information or reliable information for upstream emissions. I think it is the complexity of the supply chain which often makes it difficult (Oil and Gas A, Interview 1).

The second reason is a fear of double counting, which can occur if we calculate total national or global emissions data which is cumulated from the emissions data submitted by individual organisations. There is a clear risk of double counting, for example, when the Scope 3 emissions for one organisation may be the Scope 1 emissions of another company.

> There will absolutely be double-counting compared to others' reporting. For example, Contact just released their annual report today which includes their GHG Inventory and as part of that, they have not included emissions from electricity purchases from us through an optional agreement and pass that they on to their customers. So basically we are reporting that under our Scope 1 emissions and they are reporting that under their Scope 3 emissions so there is double counting in the industry (Utilities D, Interview 1).

And third, there are methodological difficulties:

> There are methodological debates. It is just a different way we can do things and sometimes we find that we choose one way and it could be another way of doing it. It doesn't mean that it is not being transparent. There might be sometimes when we have new sources of data so there might be sometimes where we have new sources available and we did the transition to new sources every time (Agriculture A, Interview 2).

ISO 14064 has developed more comprehensive reporting standards for Scope 3 emissions:

> The new standard is ISO 14064 – part 1 has just been published in December 2018 with the new updated version and it has new requirements around the Scope 3. So it means if they have not been measuring it, it does not mean they are doing it wrong. Warehouse has been audited. They are compliant with the standard but there would be challenges for them moving to the new standard. And they would probably have to reset their base year because there would be such different boundaries for their footprint (Sustainability Consultancy A, Interview 1).

Antonini and Larrinaga's (2017) findings noted that corporate reports do not always include their environmental impacts from outsourced goods and services. Ultimately, their outsourcing activities might be associated with poor sustainability performance. Furthermore, companies could mislead disclosure of their poor performance by disclosing their environmental impact which is indirect and immaterial, only to fit into the "in accordance requirements". It's consistent with Gouldson and Sullivan (2013) that most of the reported targets are associated with companies' direct rather than indirect emissions. The inconsistencies and obscurities in corporate reports do not allow stakeholders to make a confident evaluation of whether the targets have actually been delivered.

Companies should review, and if necessary revalidate their targets (1) to ensure targets remain aligned with the most recent climate science and best practices; (2) document any major changes, for example, expansion of the company, acquisitions or divestitures; (3) recognise other factors such as future technological developments and political developments on climate change.

> I think it is a 2030 target but we don't yet know exactly how can we get there as we rely on technological changes to help us to get that point but they are going to keep reviewing – kind of every few years review what their target looks like and necessarily restating it to make sure they can get it makes sense. And I think it absolutely makes sense because things always going to shift (Utilities D, Interview 1).

> The initial target we set makes sense for us but now, even a few years further on, we have more understanding of future changes in our business but we have to go back probably update the target again (Telecommunication A, Interview 1).

Setting a long-term target allows companies to be flexible in selecting options for their mitigation practices as well as wait for new technology development. In some cases, there are unexpected circumstances that can occur along the way, preventing companies from achieving their emissions reduction targets. For example, business growth along with total business emissions might be higher than-predicted. In this case, in an attempt to retain stakeholder's trust and confidence, companies could transparently communicate their progress achieved to date, and what remaining emissions reductions need to be achieved as well as addressed in the plan to move the enhancement of emissions performance forward.

8.4. Conclusion

This chapter aims to enhance our understanding of rationales for corporate GHG emissions reduction targets setting by exploring the meaning-making of these targets and the challenges associated with setting emissions reduction targets. A typical rationale given by the corporation has to do with corporate self-interest. Setting an emissions reduction target allows companies to demonstrate their serious commitment to tackling climate change to their stakeholders. The findings of this chapter reveal the extent to which corporate climate change targets setting, among New Zealand leader firms, is connected to the wider planetary boundaries level. A large number of sampled companies failed to consider how their organisational impacts were contributing to the climate change tipping point. Without science-based targets, these companies have no way of determining whether their corporate sustainability efforts are contributing to ecological sustainability and resilience enhancement. Ultimately, without any scientific evidence,

these companies might misrepresent their performance evaluation and monitoring information.

Setting a climate-related target could help companies achieve the ambition of sustainability leadership which shows they are ahead of the game and thereby improve their reputation. Some companies apparently rely on the course set by the New Zealand Government policy and wait until the actual implementation of the Zero Carbon Act before they take action. Other companies, however, have decided to set emissions reduction targets in anticipation of future policy and competitive developments.

Types of targets, ambitious level of targets and target boundaries are heavily firm-specific. Many firms set a relative or intensity target rather than setting an absolute term target, let alone science-based targets, as managers are aware of tension between business growth and an absolute reduction in greenhouse gas emissions. Some companies have shown their support of the science-based target as it could demonstrate a credible and robust commitment to climate change mitigation as well as provide great opportunities for a company to publicly show its support for climate action. Still other companies might feel reluctant to adopt the science-based target due to lack of time, financial resources and lack of understanding of the setting process. Ultimately, due to the legitimising role of the climate change target, the risk of losing face when a target could not be achieved is relatively high as for some companies such that they might need to change their business models.

Many companies do not stretch the scope of targets beyond their direct control, while the majority of their emissions remain hidden from their uncontrolled emissions, such as supply chain emissions. Lack of transparency occurs for a number of reasons. These include such as low data quality, flexibility in measuring and managing indirect

emissions (Scope 3 emissions), given that companies voluntarily select any categories of Scope 3 emissions that are relevant to their business.

Target ambitiousness is believed to reflect substantive intentions to reduce emissions. The level of the target depends on factors such as the choice of a baseline year to compare emissions with, the year in which the target will have to be achieved, company's activities in the past and future, and company growth among others. The corporate climate change target is hardly comparable between different companies, sectors and countries. Therefore, only science-based targets represent a truer and scientifically justifiable approach toward limiting global warming to less than the tipping point. Otherwise, setting a corporate emissions reduction target may not lead to an absolute reduction in GHG emissions.

CHAPTER 9 – DISCUSSION

9.1. Introduction

This chapter discusses the findings presented in the previous three chapters and examines them in relation to legitimacy theory and institutional theory. The chapter is structured as follows. Section 9.2 discusses substantive and symbolic approaches that companies sampled adopt in mitigating climate change, with a particular focus on setting and reporting their carbon emissions reduction targets. Section 9.3 then explains the findings through the pillars of institutional theory, with particular attention paid to regulative, normative and cognitive pressures, to make sense of how these factors might be embedded in the substantive or symbolic strategy management in these companies. Section 9.4 explores how legitimacy theory justifies the study results through three different legitimacy dimensions; pragmatic legitimacy, moral legitimacy and cognitive legitimacy. Section 9.5 summarises reflection of the findings with the theoretical framework from both legitimacy theory and institutional theory. This chapter finishes with concluding comments in Section 9.6.

9.2. Substantive vs Symbolic Corporate Strategic Responses

Ashforth and Gibbs (1990) emphasise two means by which organisations seek legitimacy: substantive management and symbolic management. Substantive managements refers to the actual, significant and considerable change in organisational objectives, structures and processes or social institutionalised practices. Organisations seek legitimacy by conformity to values, norms and fulling expectations of stakeholders. In contrast, symbolic management portrays a symbolical management style so the organisation can appear consistent with social values and aspirations. Symbolic

disclosures are insufficient to promote informed decision-making by stakeholders (Smith *et al.* 2008, Marshal & Brown 2003). Borghei *et al.* (2016) indicate that growing pressure from stakeholders can have an impact on corporate carbon engagement, and may end up with more substantive GHG emissions management and reporting over time.

9.2.1. Substantive Strategy

A small number of the firms studied approached climate change mitigation via a substantive approach. These organisations had proactively researched and developed alternative operational processes, invested in renewable energy technology such as an electric vehicle fleet. They provided incentives to drive everybody in the same direction in order to achieve their stated climate change objectives. Utilities C Company serves as a great example of an investment into an alternative electricity generator. Utilities C works in a partnership with Dermal Institute, a research institution, that identified alternative materials to lithium to enhance grid energy storage for times when electricity is inexpensive and abundant (e.g., from intermittent power plants of renewable electricity sources). Such initiatives led to improved efficiency, less resource use, reduced emissions and enhanced Utilities C's corporate reputation.

Furthermore, target ambitiousness is believed to reflect substantive intentions to improve GHG emissions performance. Ioannou *et al.* (2016) found that targets with a larger percentage of emissions to be reduced are associated with environmental improvement. However, in this study, targets' ambitiousness seems to be a random choice and very arbitrary. For example, without any evidence of the connection with science-based targets, Utilities A claims that "their current emissions targets are actually more ambitious than the 2^{o}C". Similarly to Telecommunication B (interview), they found no

scientific reason behind the target: “our target was an appropriate mix between an ambitious and realistic target”.

The level of the target is highly sensitive to factors such as the regulations of climate change, nature of business activities; and business growth. The level of the target also depends on what baseline year was used for a comparison to which a set target has to be achieved and how fast emissions would rise under a business-as-usual scenario (Pinkse & Kolk 2009). Spitzeck *et al.* (2009) suggested that setting “ambitious” targets, i.e., targets set that reflect improvement of a company’s environmental performance beyond a business-as-usual approach, requires a benchmarking exercise in which the environmental performance of the specific company is compared to that of its peers. This also includes benchmarking the company against the best practices in the relevant industry sector. The level of ambitiousness needs to comply which the degree to which firms want to address historical or social performance gaps (Bromiley & Harris 2014) or develop strategic first-mover advantages (Pinkse & Busch 2013). In this study, the evidence that target ambitiousness appears to reflect substantive intentions to reduce emissions is rather weak.

9.2.2. Symbolic Strategy

For most of the other firms in my study, climate change mitigation responses are only symbolic. Companies mostly focus on the low-hanging fruit, representing actions that are relatively easy to accomplish. Interventions that include advances in technology and efficiency often drive companies to implement practices with lower costs, resulting in more profitable outcomes. The “bottom line” was the primary driver of their activities. Most organisations chose to address environmental improvements via energy eco-efficiency.

The eco-efficiency concept allows companies to show their environmental performance improvement even though absolute impacts on the environment might increase overall (Milne *et al.* 2009, McDonough & Braungart 1998). Bowen (2011) points out that the promotion of greater efficiency and cost reduction can actually result in overall increases in GHG emissions through increased consumption.

My sampled organisations argued that their provision of products and services which are fundamental for maintaining New Zealand's economic growth outweigh the potential GHG emissions impacts of their operations. Wright and Nyberg (2017) warn that such strategies suggest a lack of long-term orientation that, in return, reveal the tension between meaningful and impactful engagement in respect to mitigating the impact of climate change. Such responses only point towards short-term profitability.

Additionally, there are some corporate proactive statements such as "getting out of coal is an absolute priority for us and transitioning from the natural gas to renewable resources to reduce our footprint to net-zero by 2050" that are often mentioned by businesses in liquid fossil fuels and the industrial processes sector. However, there is a lack of legal obligation to align corporate strategy and investment decisions to climate targets. There is also a perceived lack of financial incentives and knowledge on existing alternative green technologies available on a large commercial scale (Zhao *et al.* 2016).

Many firms set an efficiency (or intensity) target rather than setting targets in absolute terms, let alone, science-based targets. These targets mainly focus on energy efficiency gains or greenhouse gas emissions intensity because managers are aware of the tension to decouple business growth from the absolute reduction in greenhouse gas emissions. Apparently, companies prefer efficiency targets since they allow for the growth of emissions (Fischer & Springborn 2011).

However, rather than intensity targets, absolute targets are found to be linked with a measurable reduction in GHG emissions (Dahlmann, *et al.* 2017). Even though absolute targets represent a compelling tool for driving changes in corporate environmental performance, it is more meaningful if targets are set based on the planetary boundaries principle, i.e., a "fair share" of total GHG emissions reductions required to meet Paris Accord. Six New Zealand companies set science-based targets (Thinkstep, Enviro-Mark Solutions, Auckland International Airport, Contact Energy, New Zealand Post and Sky City Entertainment) and five other companies (the Warehouse Group-TWG, Synlait, Fletcher Building, Kiwi Property and Port of Auckland) have committed to science-based targets (Science Based Target Initiative, 2020).

Many companies have shown their support for science-based targets as they are seen as effective. Science-based targets could demonstrate a credible and robust commitment to climate change mitigation as well as providing a company with opportunities to show support for climate action publicly. It also demonstrates leadership, giving companies the advantage of a head start in the transition to a low-carbon economy.

Other companies might feel reluctant in committing to science-based targets that are set based on the planetary boundary principles. Indeed, once they set science-based targets, some of the carbon-intensive companies might move towards a radically different logic/business model which requires them to eliminate most emissions. In order to achieve declared targets, companies might need to change their business models (for example, those in the oil and gas sector) to align with their business practices related to climate mitigation.

The underlying intentions may vary due to the companies' expressions of their beliefs about the need for and purposes of setting such emissions reductions targets. Many

companies adopt more symbolic approaches designed to enhance organisational legitimacy for various reasons. The uncertainty of climate change policies and business growth and expansion allows them to decouple total GHG emissions from their business growth (Dahlmann 2019) by taking the symbolic approach (for example, setting intensity targets). I argue only science-based targets represent a valid and scientifically justifiable approach toward limiting climate change. Firms that chose to set more symbolic targets might contribute to greenwashing designed to give the impression of caring about climate change while largely continuing with business-as-usual (Dahlmann 2019, Lyon & Maxwell 2011, Lyon & Montgomery 2015). Stakeholders, therefore, need to be concerned about any symbolic commitment which may be as effective as not having any targets at all.

In terms of emissions target scope of coverage, including direct emissions (Scope 1 emissions), indirect emissions (Scope 2 emissions) and other indirect emissions (Scope 3 emissions), the interviews show that many companies do not stretch targets beyond their direct control. This includes their upstream and downstream emissions from their supply chains and lifecycle of their operations. For example, Oil and Gas A partially covered some elements of Scope 3 emissions that come from their supply chain emissions and customers' use of fossil fuel. Healthcare A (Interview) admit that "perhaps 80 per cent of our environmental impact hidden comes from the supply chain". This is roughly the same as Transportations and Logistics A (Interview), who declared that "90-95 per cent of our emissions are Scope 3 which is not directly caused by us… because all of our heavy truck fleets are contracted. We don't own the trucks, and we don't employ the drivers".

Emissions along the value chain, indeed, represent a company's biggest GHG impacts. Temperature Score (2019) documented that over a third of the world's 200 largest

companies do not disclose fully their GHG emissions, which reveals a lack of transparency from companies across all market sectors. A number of explanations why Scope 3 information is incomplete arose during my interviews with the sustainability managers. First, there is evidence of a low-quality information problem, as most companies need to retrieve data from third parties such as suppliers and customers. Second, there is a lot of flexibility in measuring and managing Scope 3 emissions as companies can voluntarily select any categories of Scope 3 emissions that are relevant and material to their business. Third, there is the possibility of double counting in which Scope 1 emissions of one organisation may be considered as Scope 1 or Scope 2 emissions of another. The findings of this study are consistent with Gouldson and Sullivan (2013) and Antonini and Larrinaga (2017), noting that most of the reported targets are associated with companies directly rather than indirect emissions. Such inconsistencies underestimate the amount of generated emissions and portray a misleading picture of companies' carbon impact. Lack of transparency does not allow stakeholders to make a confident evaluation of whether the targets have been fully covered and eventually, whether the targets have actually been delivered.

Some of the companies in the sample highlighted a number of practical constraints in setting a voluntary climate change reduction target. The first possible explanation for this is that the implementation of climate-related target settings does not reveal the true impact of the corporate activity on GHG emissions. This is due to the incompleteness of GHG emissions data and self-selection of what to report by the company. GHG emissions disclosure reporting remains a voluntary corporate practice. This contributes to the debate on the limitations of voluntary reporting of corporate environmental performance and the potential benefits of standardised and mandatory reporting (Kolk *et al.* 2008, Sullivan & Gouldson 2012). However, even if a mandatory reporting requirement is introduced, it is

likely that this would only be a partial solution. Goudlson and Sullivan (2007) argue that under mandatory schemes, companies can maintain significant flexibility in the ways they measure and report their emissions. Data is hardly comparable between different companies, sectors and countries due to the absence of global agreement on corporate carbon reporting.

A second possible explanation is that setting a corporate emissions reduction target may not lead to a reduction in GHG emissions. Many participants (for example, Real Estate A and Healthcare A) highlighted the adoption of low-hanging fruit in their carbon management while our global atmosphere calls for rapid reductions in emissions. The extent of this delay may become critically important.

The third possible explanation is that only a minority of companies set science-based targets. In addition, a large proportion of large corporations have not had any commitment and are not sufficiently impact-oriented.

Trexler and Schendler (2015) argue that the efforts of individual companies can be made meaningless by the actions of others. They also criticised companies' science-based targets setting approach as "green fluff" and consider it a distraction that can lead to a delay in developing relevant policies. This could be for several reasons: (1) only a small number of companies set science-based targets and their emissions account for a tiny proportion of global emissions; (2) these corporate targets might not exist in a world in the absence of policy or robust carbon pricing; (3) companies having approved science-based targets might prefer to seek low-quality carbon offsets which deliver the little environmental benefits and; (4) the approach to science-based target setting might mask meaningless solutions, further confusing the public and actually delaying progress in taking effective actions.

9.3. Institutional Theory (Regulatory, Normative and Cognitive Dimensions)

Institutional theory suggests there exists a limited norm of what is considered legitimate by the institutional environment. Institutional theory represents institutional complexity (i.e., contextual and multilevel political, cultural and social aspects of organisational behaviour) on the field level which is characterised by multiple demands from different stakeholders (Herold 2018). Institutional theory distinguishes different kinds of institutions which all create implicit or explicit influences to the adjustment process and formulation of organisational behaviours and practices (Scott 1995, 2013). Institutional context might be (1) what other firms (in the same sector/country) do in their environmental reporting (imitation), (2) what the firm has done in the past (routine) and (3) relevant regulations and laws governing disclosure (institutions) (Cormier *et al.* 2005). DiMaggio and Powell (1983) suggested organisational practices that address climate change become diffused and homogenised across firms due to coercive isomorphism, normative pressures and mimetic processes.

9.3.1. Regulatory dimension

Companies are encouraged to set long-term targets to reduce their environmental impact as these companies have shown a significant effect of the Paris Accord in New Zealand's climate change policy, including preparation for the transition to a low-carbon economy. However, a few companies have an approved target which is consistent with the 2^{o}C scenario outlined in Paris Accord. Indeed, if companies set arbitrary carbon reduction targets with no linkage to planetary boundaries, it is obvious that these are not likely to be sufficient enough to maintain ecological resilience. The pressure is growing on companies to cut their carbon emissions in line with the Paris Agreement.

One of the objectives of my research is to investigate whether NZ listed companies in the sample were setting a science-based target from 2012 to 2016. The findings reveal that on the whole, they were not. None of the companies set the science-based targets during this period. Most of the companies described targets without reference to the global safe limits described by the planetary boundaries framework in 2012. However, this number of companies decreased dramatically after 2012, which demonstrates at least some awareness of the importance of setting science-referencing targets or science-based targets.

KPMG (2018) observed that public scrutiny of companies' carbon emissions has steadily increased since the adoption of the Paris Accord in 2015. Under the agreement, New Zealand has committed to play an active part in keeping global temperature rise to 2ºC or less above pre-industrial levels. In coming years, there will certainly be an increased number of companies setting and reporting their carbon reduction strategies that are linked to national or global climate goals.

In my study, some company representatives frequently spoke of the need for "compliance" under the Emissions Trading Scheme, their obligation to report and to surrender carbon units underneath the ETS. For large carbon-intensive companies, financial liability under ETS is not insignificant.

While many companies report the increased costs associated with the ETS, this cost will be passed onto customers in order to recover expenses through price increases. Additionally, offsetting is considered a new opportunity for profit as they can sell the carbon credits that they do not surrender in the carbon market and actually generate revenue from them. This finding is consistent with Lansiluoto and Jarvenpaa's (2010) research which demonstrated that the financially driven decision on environmental

performance by an international Finnish company and all the selected environmental measures in the annual report were linked to profitability.

However, organisations in my study expressed a high degree of frustration with the legislative delays and political uncertainty with the ETS and Zero Carbon Act. It is notable that the provision in the Zero Carbon Act is the minimum New Zealand should be doing from a political standpoint. It is not leading the world. It is just catching up with where we should be. Some of the respondents (such as Real Estate A and Tourism A) said New Zealand's ETS should be strengthened and "as a nation, we have to price carbon fully, not 25NZ$ per tonne. It must be 300 to 400$ per tonne" and "putting the real cost attached on carbon (carbon tax); people are going to reduce their taxes; therefore, it would reduce their carbon".

Some respondents choose to adopt a substantive approach. Despite the fact that offsetting makes it easier for companies to continue with their practices rather than working towards changing them, companies choose to focus on reducing their emissions by investing their money into research and development ("R&D"). My studied companies, therefore, showed mixed evidence that organisations adopt a symbolic and substantive approach with the primary intention of maintaining their legitimacy in the face of legislative pressures.

Businesses and governments are broadly in agreement about the impact of changing climate and the enormous risk that climate change presents to society and the environment. One hundred ninety-five countries signed up to the Paris Agreement in 2015 to keep global warming well below 2ºC. Unfortunately, global actions are insufficient to tackle climate change. The collective sum of all national commitments on climate change only accounts for around a third of the total reductions required to keep

the world on a below 2ºC pathway (Climate Action Tracker 2019). BP (2019) calculated that the rate of growth in carbon emissions is much slower than in the past 20 years, but emissions are still growing faster than the sharp decline necessary to achieve the Paris Accord goals. CO_2 emissions from energy use will likely continue to rise by around seven per cent to 2040 due to population growth and most importantly, increasing prosperity in the developing world. Global greenhouse emissions from fossil fuels reached a record high of 37 billion tonnes of carbon dioxide in 2017 (Global Carbon Budget 2017).

Dietz *et al.* (2016) noted that only 30 per cent of 160 companies in 14 sectors of the economy assessed are or will be aligned with the Paris Agreement benchmark in 2030. Only 30 per cent have strategies consistent with the emissions reductions pledged by Paris Agreement signatories in the form of "Nationally Determined Contributions". This demonstrates that progress is being made, although those pledges alone are widely recognised as insufficient.

9.3.2. Normative dimension

Under institutional theory, in an attempt to maintain legitimacy, organisations engage with industry associations to collectively tackle political uncertainty and controversial social pressures (DiMaggio 1988, Powell & DiMaggio 1991, Suchman 1995). Many of the organisations have engaged with industry associations and interest groups (such as the Climate Leader Coalition or the Sustainable Business Council) on their position relative to their business leadership on the issue of climate change. These associations represent an opportunity for businesses to work together and learn from each other to reduce their emissions.

Given the high level of uncertainty over climate change market developments and policy responses, organisations face challenges in making rational, objective and appropriate

strategic responses which align with both their economic interests and their contributions to climate change mitigation. They might, therefore, be more subject to institutional pressures (Levy & Rothenberg 2002). Engaging in such environmental associations is believed to improve corporate environmental reputation, which serves to enhance a firm's competitiveness, and could also be interpreted as increasing legitimation.

In contrast, other companies appeared more reluctant to become members of these coalitions as they have not yet committed to reduction targets consistent with keeping within 2°C of warming. Indeed, for some high intensive carbon sectors, it is extremely difficult to make significant carbon reductions. Thus there are likely to be companies that do not know how they can reduce emissions and therefore do not want to set targets. However, one respondent was concerned that signing a joint statement does not ensure a company's commitment to an actual change towards a low-carbon economy:

> In the next couple of years, we can see more [performance] pressures or more scrutiny pressures. The broader communities, the business community, investors' community, political community, the social community will ask. It is easy to sign up to that, (put your name on their website as you are supporter), but what are you actually doing? (Telecommunication B, Interview 1).

The level of the proactive approach of each company also varies depending on industry-specific conditions (Kolk & Levy 2004). Companies have to comply with different regulations depending on the type of industries in which they are involved. For example, the New Zealand Green Building Council has asked building owners (such as Kiwi Property) to start certifying their buildings to zero carbon in 2020 and have all buildings built to zero carbon by 2030. Similarly, building developers (such as Fletcher Building) need to construct new buildings to zero carbon and with twenty per cent less embodied carbon by 2025 (Enviro-Mark Solutions and NZGBC 2019). Perhaps we will see such normative pressures more often in the coming years.

Conversely, transparency about environmental performance creates a favourable position for the company, which allows external stakeholders to evaluate their activities and to take them into account in their own decision-making. Adoption of sustainability reporting standards is considered to be a communication tool that companies use to convey a transparent image. Companies could claim their institutional credibility through having third party assurance for their emissions data or by aligning with international accounting and reporting guidelines such as the GHG Protocol, ISO 14064, Global Reporting Initiative or the Carbon Disclosure Project.

The GRI G4 standard requires companies to provide disclosure on their carbon footprint, greenhouse gas reduction, to track performance and progress on a yearly basis, and the assessment of areas where increased efforts are required and a change of strategy is desirable. Despite the companies in the sample being the largest listed companies who have the resources to become reporting leaders, the findings show that top reporters have not done all they can in reporting on their climate change impacts. It might be, perhaps, that the GRI standards might be too difficult and demanding for them to use.

Milne *et al.* (2003) argued that some indicators in the GRI standard might not be relevant to all organisations. For example, in my study, none of the sampled companies discloses EN20-Emissions of Ozone – Depleting Substances (ODS). They also suggest that organisations are falling short of the ideal benchmark because of the costs involved in generating the necessary information to report. The preparation costs for voluntary corporate social responsibility disclosures are substantial (Thorne *et al.* 2014, Leuz & Wysocki 2016). More importantly, GRI is considered a tool that maintains and enhances a company's legitimacy. Companies may consider keeping certain information private when they perceive that reporting might significantly harm the firm (Healy & Palepu

2001, Cho & Patten 2007, Patten 1991). “Once we got that information and we are comfortable with it, going out is not really an issue” (Real Estate C, Interview 1).

On a voluntary basis, the adoption of these standards allows companies to cherry-pick information in order to claim their credibility. Incomplete disclosure only serves as symbolic legitimation which prevents a substantial change in organisational behaviour towards ecological sustainability. Arguably, the adoption of these standards is voluntary and prone to interpretation and even greenwashing tendencies. A fair and predictable reaction from those organisations providing relatively poor reports on climate change is that “it is early days”, and given time they will improve their reporting. Improvement is expected as reporters develop experience and expertise and measurement systems. Nonetheless, Milne *et al.* (2003) argue that there will be limits to this improvement.

It is expected that companies will benefit from changing their communication. Organisations claim that being transparent creates a favourable position for the company as it allows external stakeholders to evaluate their actual performance (Deegan 2002, Ward *et al.* 2009). In addition, stakeholders demand for more transparency and accountability put organisations under more pressure more than ever before (Milne & Gray 2007).

To leverage transparency, organisations can implement the practices and standards-based on external verification. However, in my study, using external verification remains patchy. Only a limited number of organisations implement the methods and standards of external verification. Their actual performance therefore might not be reported reliably and credibly. Third-party assurance for corporate sustainability reports are not mandatory in any country and New Zealand is no exception to this (Milne 2003).

9.3.3. Cognitive dimension

If a company's motives are to seek legitimacy, they report on GHG emissions but only communicate good news (Gray & Milne 2002). It is difficult to discover anything meaningful about a company's emissions performance based on a report alone. The GHG emissions reports do not reveal a company's sustainability performance but merely points to maintaining legitimacy (Cho & Pattern 2007) and mimicking behaviour (De Villiers & Alexander 2014, De Villiers *et al.* 2014).

Consistent with institutional theory, a few organisations in my study exhibited similar responses (mimetic isomorphism) in complying with institutional norms and pressures. Their actions appear to be motivated to comply with standards in order to maintain their legitimacy. For example, an organisation in the technology industry, gave an example of a mimetic response with British Telecommunication – a UK counterpart. From this perspective, convergent organisational responses to climate change were observed as a result of institutional pressure. Climate change creates uncertainty because the costs and positive impact of any responsive initiative on the company's financial performance are not guaranteed. Companies, therefore, can imitate similar organisations in the field with their target setting that is worth adopting and also reduce the uncertainty or complexities.

Institutional theory predicts strategic convergence when firms with similar resources and capabilities are exposed to common climate change problems (Levy & Kolk 2002). Shinkle and Spencer (2012) argue that organisations may have isomorphic presentation through (1) independently selecting the same strategy to deal with climate change mitigation (which, perhaps, differentiates them from their negative exemplars); (2) mimicking a successful business model (mimetic behaviour) (which perhaps, reduces the distance between their organisation and their positive exemplar) or; (3) evolving towards

a socially constructed norm. In my study, there is very limited evidence that studied companies have engaged in detailed mimetic behaviour of a successful model, but rather present themselves as fitting into broader norms which is consistent with Shinkle and Spencer's (2012) research. It also appears that the factor motivating the studied organisations to strive for climate change legitimacy is shareholders rather than the global society.

Due to the legitimising role of the climate change targets, the potential loss of face when targets are not met will be expected quite high. In other words, setting a science-based target is risky and depends on many strategic decisions. Other reasons why companies found it difficult to meet science-based targets were a lack of time, financial resources and understanding. Climate change creates uncertainty because the cost and positive impact of any response are not clear on a company's financial performance. The companies, therefore, imitate similar organisations in the field, justifying the adoption of worthy targets and also reducing uncertainty or complexities.

9.4. Legitimacy Theory (Pragmatic, Cognitive, and Moral)

Following the legitimacy point of view, environmental target setting and reporting will not deliver significant changes in environmental performance because targets have been selected that serve to prepare for future environmental pressures from stakeholders. Target setting and reporting are tools used to signal the desired future image or polished current image of a firm without making any actual significant change to improve environmental performance. These targets are formulated in a way that makes them imprecise and impossible to evaluate and therefore, cannot be used to direct or control activities effectively (Edvardsson 2005). The most popular category of performance reported against the carbon target is when they had been met. There is a very small number of cases where companies disclosed a target that had not been met. This indicates

that companies are more likely to report positive information that is consistent with a legitimacy logic; companies want to gain their legitimacy through setting and reporting their target achievement. Furthermore, the achievements related to corporate climate change targets do not necessarily mean that corporations do enough to protect the environment. In other words, it is meaningless if organisations do not account for the ecosystem's capacity to stay within the 2ºC limit.

9.4.1. Pragmatic dimension

The underlying business logic is that maximising shareholder value compromises environmental activities mixed with sustainable development and more legitimate corporate activities focused on business growth (Prasad & Elmes 2005). Therefore, corporate climate change mitigation responses might be seen as greenwash adopted to legitimise their business interests (Banerjee 2008).

To have an authority to continue claiming societal resources, organisational values and activities need to be seen in correspondence with societal values in which corporations operate (Nyberg & Wright 2012). Corporate legitimacy is dependent on the congruence of corporations with surrounding norms and values. In my study, respective companies showed characteristics of responsible, knowledgeable protectors and providers. They all contribute to the formation of an image of legitimacy, powerful and morally legitimate norms of behaviour. Mead (1934) defined an organisation's identity as the awareness to whom an organisation is related, how an organisation perceives other organisations, and how an organisation believes other organisations perceive them. Therefore, identity is a relational phenomenon. Indeed, when under attack for a negative contribution to the environment and increasing emissions, in particular, an image of being a powerful and moral organisation can be seen as a legitimation strategy to protect and increase

acceptance as actors in society by managing social perceptions such that their actions appear to be appropriate (Suchman 1995).

"Values talk" appears to be a foundational element of organisational identity (Shinkle & Spencer 2012). Rhetorically, my sampled corporations constructed themselves as legitimate through the legitimating practices of power (i.e., knowledgeable and leader) and appeals to positive moral evaluation (i.e., responsible and protector) (see Van Leeuwen & Wodak 1999). These organisations' ethical behaviours flowed naturally from their values to their activities regarding climate change mitigation and climate change target setting as voluntary actions. The rhetorical presentation of values as legitimate norms establishes comparative standards which can examine how emissions reduction performance and changes in corporate climate change strategy reinforce managerial interpretations of climate change issues and perceptions of corporate identity (Sharma 2000). This enables corporations to authorise their subsequent actions as legitimate based on their self-defined values. In my study, recognition of climate change issues provides positive associations for corporate identity, such as where my sampled companies want to be recognised as a "climate change leader, protector, provider, responsible and transparent". This actually creates positive emotional associations in managerial interpretations and stimulates opportunity-seeking behaviour.

My studied companies agree that climate change is caused by human activity, that it constitutes a serious problem to which there is more than one solution, and that all people and organisations must contribute to the solution of this problem. Accepting this responsibility, companies have different long-term climate strategies and initiatives (Frandsen & Johansen 2011).

The development of new voluntary reporting standards (e.g., Carbon Disclosure Project and Global Reporting Initiative) and increasing investor interest in corporate environmental performance reinforce corporate environmentalism (Wright *et al.* 2012). The goal is to legitimise profit-seeking corporate behaviour in response to environmental criticism. The reality is that the absolute discrepancy between economy and nature is all but removed by proclaiming a possible win-win relationship between corporate capitalism and climate change (Fleming & Jones 2013). Therefore, it further contributes to the contradiction of creative self-destruction by ensuring that things remain the same, that nothing really changes, and that the life can go on as before (Cook & Swyngedouw 2012, p. 1973).

The win-win relationship between commitment to increase GHG emissions performance and financial performance is often emphasised in the literature on environmental management (Murry *et al.* 2006). Environmental-economic performance has a positive correlation because of cost-savings, cost or litigation avoidance, revenue generation or for being an exemplar of best practice (e.g., Hassan & Romilly 2018, Chapple *et al.* 2013, Clarkson *et al.* 2015). Additionally, if environmental pollution illustrates inefficiencies in the usage of resources, a reduction in environmental impact benefits both the environment and corporate bottom-line. (Porter & van der Linde 1995).

Boiral *et al.* (2012), in contrast, confirmed that corporate efforts to reduce GHG emissions have a negative relationship on financial performance. Ultimately, despite the fact that GHG emissions reduction commitment is primarily motivated by environmental and social concerns (such as pollution reduction, or public demonstration of the company's commitment) and by pressure from various stakeholders, in the absence of mandatory regulations with specific GHG emissions reduction targets, pressure from stakeholders can be quite weak and ineffective. However, this negative relationship

seems to be less significant for highly sensitive environmental companies or for those that have adopted ISO 14001 certification. These companies already incorporated environmental management into their organisational practices. It is where financial motivations would play a less important role in their decision to commit to reducing GHG emissions.

Other studies, however, report mixed results between GHG emissions reductions and financial performance. For example, Misani and Pogutz's (2015) findings indicate that carbon performance improves financial performance up to a certain point, until the marginal benefits (in terms of internal efficiency or enhanced reputation and legitimacy of further reduction of carbon emissions) do not offset the marginal cost. This finding is consistent with Tatsuo (2010)'s study where the eco-efficiency had a significantly positive effect with Return on Assets (ROA) in the chemical industry. Nevertheless, the positive correlation between environmental performance and the economic performance maintain up to a certain point but will change negatively afterwards. This means that efforts to increase environmental performance will bring economic benefits, but eventually, improvement of environmental performance will increase economic costs (Tatsuo 2010). These contradictory findings indicate the reasons why despite growing stakeholder and regulatory pressure, companies have been slow to provide an adequate response to tackle climate change beyond marginal efficiency improvements that correspond to "low-hanging fruit" (Lewandowski 2017).

Companies are motivated to set targets by legitimacy-seeking desire. Setting an emissions reduction target allows corporations to demonstrate their serious commitment to tackling climate change to their stakeholders. In my study, the sampled companies emphasise the role of setting ambitious targets which may enhance their relationships with investors, improve marketing and better manage their social contract. Stakeholders

put considerable pressure on legitimacy-seeking companies to set targets and disclose information on their activities to tackle climate change (Murray 2004). Targets provide a corporate communication tool demonstrating their environmental commitment to stakeholders for long term sustainable growth.

On the other hand, some researchers might argue that some managers may prefer low environmental legitimacy over the costs of improving environmental practices and performance (Walley & Whitehead 1994). However, my study indicates that managers have incentives to manage their GHG emissions performance so that the information released is positive. Nishitani and Kokubu (2011) argued that improvement of GHG emissions performance enhances the firm's value, especially, where market discipline imposed by investors is significant due to the possibility that the reduction of GHG emissions will lower the risk of environmental liabilities and increase the "bottom-line". Nishitani and Kokubu (2011) illustrated that incorporating social responsibility into investment decision making increases the firm's performance.

New Zealand has passed the Zero Carbon Act (2019), which is in force from 2020. The legislation introduces a target of net-zero carbon by 2050 for long-lived greenhouse gas emissions. As the New Zealand Government continues to work to implement the Paris Agreement, and along with the Zero Carbon Act, companies expect to see more regulations to curb emissions-intensive activities. Companies set carbon targets with the aim to help to avoid more stringent rules and also an expected increase in the price of carbon credits.

In my study, investors (most notably overseas investors to NZX companies) were found to have a strong interest in corporate emissions targets and performance. Institutional investors represent a compelling and legitimate stakeholder group that has requested

high-quality information about corporate's climate change risk (Lash & Wellington 2007, Smith *et al.* 2008, Stanny & Ely 2008). Investors' demands for climate disclosure have driven companies' action faster than regulators or politicians have done in the past (Cotter & Najah 2013). Sometimes the investors' community has filled the gap left by the lack of the national Government legislation (Peterson & Rose 2006). Rather than asking companies to sacrifice long-term profitability, shareholder engagement seeks higher corporate standards in order to reduce risk over time, thus adding to shareholder value (Clark & Hebb 2004).

As a direct outcome of this pressure, many companies have set a GHG emissions reduction target to maintain their legitimacy with the stakeholders (Kolk & Pinkse 2004). Investors' demand to set emissions targets are particularly aimed at manufacturing industries, electric utilities, and service industry in my study. These companies set targets voluntarily in order to ensure their social license to operate but also gain competitive advantage since it helps companies build favourable reputations, improve the trust of investors and consumers, and enjoy favourable government policies and lower environmental legitimacy pressure.

Nonetheless, communicating environmental commitment might not be reflected in concrete action on climate change issues, hence, does not necessarily have a direct impact on an absolute GHG emissions reduction (Aragon-Correa *et al.* 2016, Boiral *et al.* 2012). This could be explained by ineffective pressure from stakeholders. The disconnect between institutional pressures and the real efficacy of the emissions reduction target setting put in place in response to those pressures has been explained by institutional theory (DiMaggio & Powell 1983). Companies are responding to external pressures by adopting targets that primarily serve the improvement of their social legitimacy without necessarily changing their operations. Considering the expectation of stakeholders, these

might be mostly symbolic and not necessarily lead to an actual reduction in emissions (Kolk & Pinkse 2007, Boiral *et al.* 2012).

However, companies may want to show that they are sustainability leaders who are ahead of the game, thereby improving their reputation with stakeholders (Hoffman and Glancy 2006). Defining and assessing corporate leadership on climate change is a relative and somewhat subjective undertaking. The justification of the motivations for a firm to assume a leadership position on the issue remains hard to find. Early movers will seek competitive advantage by shaping the rules of the game, but whether the broader corporate world will become more proactively engaged in developing future climate policies remain uncertain, given it is most likely that they will have to bear the full cost of carbon credits (Dunn 2002). Many managers found climate issue and climate target-setting complex for the changes to be met; hence, they have found it easier to adopt a wait-and-see approach.

Several corporations have set climate-targets while encouraging their major suppliers to do the same. Current global trends in corporate demand for supplier transparency, such as overseas retailers requesting that their suppliers have science-based targets if they want to continue to be their suppliers. Companies also provide their customers with products and services, thereby acting as suppliers themselves, which require them to take the environmental impact of their upstream and downstream activities into consideration (Handfield *et al.* 2005). Monitoring suppliers' GHG emissions helps to implement and develop a supply-chain strategy which could reduce climate risk by evaluating supplier bids partly based on climatic impacts. As one might expect, better measurement of the entire corporate footprint is likely to lead to greater transparency in corporate GHG emissions disclosure. A company could also reduce supplier-related risk by replacing

materials with a high potential for emissions by those with lower emissions, for example, by relying on renewable energy/material sources.

Setting a GHG emissions reduction target is essential for driving company actions to reduce emissions because they need something to measure against. Indeed, without a target, senior managers have nothing to report back to top management. In this study, the quality in GHG emissions target reporting remains low among NZX listed companies. This may imply that the refusal to engage with climate target reporting reflects a more general determination by the company to not expand the scope of their corporate reporting on climate issues. Perhaps measuring and reporting GHG emissions cost companies money. Hedberg and Malmborg (2003) suggested that companies might set a target but choose not to report the data because they are doing it internally and just not publishing them. In this case, companies do not have to report sustainability information to begin with, but management will have the information available if there is external demand for such information. They also noted that reporting helps companies to learn about themselves and to see what has actually been done in the organisation. Unfortunately, my study is only limited to interviews with climate reporters who accepted an invitation to participate, while the majority of sampled companies are climate non-reporters. In fact, there is no publicly available information to explain this curiosity.

The emergence of corporate environmentalism is a central discourse in business (Hoffman 2001). Corporate environmentalism builds on the broader concept of ecological modernisation by arguing that corporations can be powerful agents in responding to environmental problems via their innovative capacity and the profit motive. Corporate environmentalism promotes a win-win vision of business profit growth by reducing their environmental impact (Wright & Nyberg 2015). Any successful programme of action on climate change must support two objectives: stabilising

atmospheric greenhouse gases and maintaining economic growth (Beinhocker *et al.* 2008). Corporate strategies for eco-efficiency and the development of new "green" products and services meet the "business case" and metamorphose environmental concern into business opportunities (Dauvergne & Lister 2013). As critics have pointed out, these measures, through improving efficiency and cost reduction, actually encourage increased consumption and investment and so contribute to even greater environmental damage (Foster *et al.* 2010, Bowen 2011).

9.4.2. Moral dimension

Ethical aspects of environmental responsibility reflect the positive normative approval of the organisation, which relies on the judgement of organisational behaviour and activities as to whether they are the "right thing to do" or not (Suchman 1995). Bansal and Roth's (2000) study concluded that one reason why firms undertook particular ecological responses is that it is the right thing to do. The decision process was often based on the values of powerful individuals or on the organisation's values that considered ecological responses to be crucial.

In my study, when asked why an organisation supported climate change initiatives, participants often indicated that it was obligation and desire to do the right thing as a responsible corporate citizen and member of the community. The research interviewees did follow these comments with examples of initiatives to support these claims.

Some respondents expressed a sense of moral obligation to the country, and their children and felt that the business community should take greater responsibility for climate change. For example, the sustainability manager from an energy company stated that:

> I have two children, 13 and almost ten. I look at the prediction of what might happen with two degrees warming, three, four or five, and it is a very frightening prospect. And it is hard not to get kind of disheartened by it, particularly, when you kind of spent

> your entire professional career trying to convince business to try to do the right thing. One of the reasons why I move to (the name of the energy company) is because the company wants to do the right thing. You know, we are one hundred per cent renewable, climate positive and we want NZ to move away from fossil fuel. So, personally, I'm working in an organisation that is kind of matching my values which is not where I was at the previous company involved in the industry that is burning fossil fuels.

In contrast, corporate respondents often refused to take full responsibility for helping New Zealand achieve emissions reduction. They claimed that a significant root of the problem was in human nature. If consumers' awareness of green consumption increases, companies must make behaviour changes to sucessfully address the climate change issues. Unfortunately, consumers appear to lack willingness to change their current lifestyles or pay a premium for environmentally friendly products. This can prevent an organisation from attempting to introduce climate-friendly products into the market.

In fact, the respondent from an agriculture company (Company C, Interview 2) said that climate change is not yet a visible and tangible issue to consumers. He argued that waterway is a more tangible thing than GHG emissions:

> People from the town can see it. They can see the kids can't swim in the water, so they complain about it. Even though people are aware and probably most people understand climate change and the things we are having, they don't necessarily directly see it in everyday life, maybe. So as I say, climate change does not mean they can't get down the river and swim. That happens globally as well.

Hulme (2010, p. 196-7) argued that it is necessary to distinguish between risks that are situated and risks that are un-situated in order to understand the perceptions of climate change. Waterway pollution is a source of local and tangible risk, and this makes it easier to believe that the local population has a degree of control over the risk (campaigning could get the offending farm(s) closed down). In contrast, the risks associated with global climate change are un-situated risks which are distant and intangible. No-one can see climate change or feel it happening, and the causes of risks are diffuse and hard to situate.

Even when an extreme climate change event occurs, it is not transparent to the victims whether the risk could be attributed to anthropogenic climate change. It is difficult for individuals to identify them while their daily life experiences contract evidence of the impact of climate change.

Some respondents from less carbon-intensive industries felt that other industries or other countries are contributing more toward planetary destruction. They also felt that the Government must also take responsibility for actions by encouraging initiatives such as improving infrastructure systems. For many participants, the responsibility for taking climate change action cannot rest with the business community alone but requires collective action by Government, business, investors and consumers.

Bansal and Roth (2000) argued that values influence a firm's ecological responses in three critical ways. First, values help corporate managers to distinguish between those that represent an important and relevant issue from those that do not (Daft & Weick 1984). Second, environmental values can persuade managers and staff to consider environmental responses as crucial (Andersson & Bateman 1988, Lawrence & Morell 1995). Third, influential company managers may willingly change manufacturing operations, products, and processes if these fit with their own personal values (Dutton & Ashford 1993, Stead & Stead 1992).

The creation of a designated responsibility within the organisation to deal with climate change issues should be accompanied by support from leaders of the organisations. However, the challenge of getting everybody committed to the effort is a barrier that companies are aware of in affecting changes in corporate operations and transforming traditional business activities. One respondent said that

> ... setting a target is easy. However, getting balance within the business at all levels of the business from operations on the floor, who actually know how our power station

> runs, through to our senior leadership who got the strategy, through to our board to whom we are accountable for the targets we set. Targets influence the business by giving us a chance to achieve the targets that are demonstrating your opportunity. That is the hardest part. (Utilities B, Interview 1).

Many companies are motivated to set targets because it is the right thing to do. Nevertheless, when it comes to their responsibility to align with the internationally agreed method of setting science-based targets, it becomes a way to manage stakeholders' perceptions. For example, setting a science-based target "is one of the ways managing our risks around the perception that we are not going to do the right thing." (Utilities B, Interview 1).

Social responsibility and the perception of doing the right thing were the least mentioned rationales for corporate climate change targets setting. These were often seen as necessary and "nice to have" but not a "must-have". When being asked whether these companies were inclined to set science-based targets, the following answers typically included to confirm that a science-based target might be nice but not needed for them to know where they need to get to. Also, companies emphasise that the targets must be "realistic" and "achievable". The narratives revealed that organisations are balancing the need for social responsibility with economic considerations by implementing "low-hanging fruit" actions.

9.4.3. Cognitive dimension

Cognitive legitimacy is established when organisational behaviour and activities are perceived as adequate and accepted without question or are a taken-for-granted cultural account (Suchman 1995, Iglesias-Perez *et al.* 2018, Albarrak *et al*. 2019). Cognitive legitimacy refers to the extent to which the perceived comprehensibility of a new action or policy is congruent with established conceptual maps that individuals rely upon to organise information and make sense of their environment, i.e., culturally supported and

conceptually correct support of legitimacy become unquestioned (Adams & Larrinaga-Gonzalez 2007, Thomas & Lamm 2012).

Companies emphasise that innovation strategies improve their competencies as a result of the development of new environmental technologies and products that reduce emissions. It is likely that, in the course of pursuing corporate social responsibility initiatives, companies can develop innovative products and services that are beneficial to the company's profitability. Innovation could be directed at the production process or a product. Process improvements frequently encompass energy reduction (or higher energy efficiency). Companies could also use the option of drawing upon organisational capabilities as well exploring production of new products. Companies expect to increase their competitiveness as a result of climate change through process innovation or product development (Kolk & Pinkse 2004).

Innovation is different from compensation, which means companies do not participate in the innovation process themselves. Instead, compensation involves seeking solutions to the energy reduction problem that ensure activities and sources of high emissions are carried out elsewhere in the supply chain. They could, for example, replace inputs with a high potential for emissions by those with lower emissions (Kolk & Pinkse 2005). Some firms focus on process improvements which frequently encompass energy reduction. However, they are also aware of the challenges the whole industry faces, which are not always low carbon alternative products in the manufacturing process. Companies, therefore, seek to relocate activities with high emissions offshore, elsewhere in the supply chain, as a solution to reduce their contribution to the national carbon footprint (Kolk & Pinkse 2004, 2005).

Some firms in the technology industry embraced a competitiveness logic that triggered a substantive response aimed at getting ahead of their competitors, and thus save the world from the climate crisis. Their engagement, however, appears to be mostly driven by self-interest. They are looking at providing technology innovation for reducing carbon dioxide emissions to impress their customers. This aims at promoting their reputation by shaping stakeholder perceptions rather than making sincere efforts to reduce their impact on the environment (Kolk *et al.* 2008, Bebbington *et al.* 2008, Lyon & Maxwell 2008).

Some companies actively communicated their carbon emissions reduction targets and set a pathway towards decarbonisation in order to create a specific corporate image, but without any substantive organisational changes in place. An example of this was Transportations and Logistics A company, that admitted that they could not achieve their (science-based) emissions reduction target by 2030 unless there is a technological breakthrough soon. There are too many uncertainties within the timeframe of a decade or so. Such a wait-and-see strategy, however, allows organisations avoid radically changing their current business practice anytime soon (Lovell *et al.* 2009, Hoffman and Glancy 2006, Pinkse & Kolk 2009). Many firms either have little sense of what technology is available to use on a large scale or what the best technologies may be that already exist in key sectors such as manufacturing, construction, transport, agriculture, and other heavy industry. Thus, organisations rely on past technologies that are no longer sufficient to address decarbonisation expectations.

The level of target mostly rests on emissions at the baseline year for comparing against current emissions, on which year the target will have to be achieved and how fast emissions would rise under a business-as-usual scenario (Pinkse & Kolk 2009). Setting an ambitious level of emissions reduction target is a risky exercise because it can potentially damage the company's reputation if the target is not achieved. Some

companies choose to set a target with a short duration (three to five years) as it can be quickly adapted to new activities and is easy to show stakeholders that their commitment is achieved on a regular basis. Other companies choose a long-term target (e.g., ten years) which gives flexibility in waiting for what new technological developments will bring in terms of mitigation options.

Companies appear more inclined to adopt a wait-and-see approach hoping they could maintain legitimacy until there is a more unambiguous indication of political commitments and consumer demand. These firms might probably not undertake the incremental changes in their activities to reduce emissions because of a lack of clear domestic regulations as well as an internationally enforcing system (Kolk & Pinkse 2007). Their passive stance of expressing commitment to the natural environment was selected to aim at the creation of a positive impression with stakeholders and thus, encourage regulatory bodies to give them a continuing license to operate. Not only do they save money but also safeguard potential economic returns that can be generated merely by symbolic tactics (Wilmshurst & Frost 2000, O'Donovan 2002).

My study acknowledged that mixed rationales often occurred. There were many examples given where motivations were balanced, such as financial concerns against social responsibility considerations, when weighing the appropriateness of an action. This strongly suggests that corporations use multiple strategies rather than a single focussed strategy in regards to GHG emissions reduction target setting. Hence, it makes it difficult to anticipate the primary motivations behind target setting commitment emerging from the data. For example, "to meet the science-based target, we need to change the business model" or "we will make our science-based target around a part of our emissions profile" (Oil and Gas A, Interview 1), but the whole profile makes it too difficult to achieve. The impossibility of meeting science-based targets is one reason why

some companies have not set climate targets. Instead, they prefer adopting the wait-and-see approach due to the uncertainty about factors of the unpredictability of customer demands, business growth, and regulatory changes, and the like, while at the same time they are developing plans that will be initiated when those forces become more pervasive (Kolk 2000).

9.5. Summary of Corporate Climate Change Response and a Reflection on the Theoretical Framework

This section provides a summary of corporate climate change responses in my study (as presented in Figure 28 below). My study determines factors influencing corporate decisions to implement substantive or symbolic strategies as responses to climate change issues by examining the interview responses made by a sample of companies in New Zealand. A symbolic strategy indicates the effort of a company to portray itself through its presentation of image so it might appear consistent with social values and expectations. In contrast, a substantive strategy seeks to fulfil the expectation of stakeholders through action. These might include changing production practices, altering suppliers and resources or altering socially institutionalised practices. Most explanations for why companies initiate climate change mitigation practices emphasise a mix of legitimacy motivations and institutional pressures.

Figure 28: Summary of Corporate Climate Change Response in My study and the Reflection on the Theoretical Framework

Events

Climate Change Effects

Paris Agreement

Corporate Pressures and Responses (Theory and Literature Review)

Legitimacy Theory (Suchman, 1995)			Institutional Theory (DiMaggio & Powell, 1983; Scott, 1995)		
Pragmatic (Symbolic and Substantive)	**Moral (Substantive)**	**Cognitive (Symbolic)**	**Cultural/Cognitive (Symbolic)**	**Regulatory (Symbolic and Substantive)**	**Normative (Symbolic and Substantive)**
Substantive: Carbon reporting encourages substantially behavioural change (Mol *et al* 2009) Setting appropriate targets will lead to the actual improvement of environmental performance (Enkvist *et al.* 2008; Ioannou *et al.* 2016, Dahlmann *et al.* 2015) **Symbolic:** Operational efficiency-low hanging fruit (Hoffman 2006; Schaltegger *et al* .2015) Carbon disclosure only for legitimation without any radical change of business operations (Aragon-Correa *et al* 2016, Tang & Demeritt 2017)	The right thing to do (Beyond Pragmatic) (Hrasky 2012)	Wait-and-see approach Low-hanging fruit action (Lovell *et al* 2009, Jaworska 2018, Dahlmann *et al*, 2017, Ioannou *et al* 2015, Rietbergen & Blok 2013, Wright & Nyberg, 2017)	Mimetic – companies mimic themselves with others who are perceived to be successfully legitimate (Liu &Yang 2018), Comyns 2015)	**Substantive:** Due to regulatory pressures, companies achieve disclosure improvement by taking actual improvement by significantly reducing GHG emissions instead of symbolic actions (Bjorn *et al* 2017, Haque *et al.* 2016, Boghei *et al* 2016) **Symbolic:** No substantial practices change in carbon emissions reductions (Hasque & Ntim 2018; Tang & Demeritt 2017, Comyns 2015, Rietberger *et al.* 2015)	**Substantive:** Industry pressure and product innovation are drivers for companies to participate and commit in emissions trading scheme (Pinkse 2007, Gruyter 2015) **Symbolic:** GRI reporting has no impact on environmental performance (Belkhir 2016) Companies postpone their actions for future responsibility, Jaworska 2018)

Corporate Climate Change Responses found in this study

Outcomes

Reduction in GHG emissions

Public Relations

Financial gains

Employees Loyalty

Legitimacy

Reporting Responses	Strategic Responses (e.g., Target setting)		
	Symbolic	**Substantive**	**Mixed**
• Climate Target Disclosure • Carbon Performance Disclosure • Performance Against Target • GRI/CDP/GHG Protocol/ISO14061	• Focus on energy-efficiency and setting intensity targets • Mimetic without any radical change nature of business operations • Lack of emissions targets scope coverage, especially, Scope 3 emissions (emissions from supply chain) • Offshore activities with high emissions elsewhere in the supply chain • Wait-and-see approach • Low-hanging fruit	• Setting science-based emissions reduction targets • The right thing to do (Social responsibility) • Stringent regulations require companies across sectors to reduce their absolute emissions (e.g., Zero Carbon Act) • Investing in R&D	• Pragmatic (Changing in corporate goals, e.g., setting ambitious targets, changing manufacturing process, reduce costs – win-win. However, absolute emissions reduction might not be achieved because of low-hanging fruit or improvement of operational efficiency • Engagement with industry association (e.g., Climate Leader Coalition, Sustainable Business Council), work together and learn from each other to reduce their emissions as well as enhance corporate reputation, therefore, increase legitimation.

Transparency about climate change targets, carbon performance as well as performance against targets allows external stakeholders to evaluate the companies' activities. Adoption of sustainability reporting standards (such as GHG Protocol, ISO 14064, Global Reporting Initiative and the Carbon Disclosure Project) is a communication tool that companies use to convey a transparent image, and hence, claim their institutional credibility. However, my findings reveal that on a voluntary basis, the adoption of these standards allow companies to selectively choose information that is favourable to the company. Incomplete disclosure only serves as a symbolic legitimation which prevents substantial change in organisational behaviour towards ecological sustainability.

In terms of a symbolic strategy, most organisations in my sample chose to address environmental improvements via energy eco-efficiency. The eco-efficiency concept allows companies to show their carbon performance improvement while their absolute emission might overall increase. Many firms set intensity targets rather than setting targets in absolute terms, let alone science-based targets. These targets mainly focus on energy efficiency gains or greenhouse gas emissions intensity because managers are aware of tension to decouple business growth from the absolute reduction in greenhouse gas emissions. Intensity targets allow for the growth of emissions by companies.

Consistent with institutional theory, a few organisations in my study exhibited a mimetic response in complying with institutional norms and pressures. These companies imitate, setting a target which is similar that of other organisations in their field. Climate change creates uncertainty because the cost and positive impact of any responsive initiative on the company's financial performance are not guaranteed. Mimetic behaviour of a successful model reduces the uncertainty and complexity of target setting.

In terms of emissions targets scope coverage, many companies in my sample do not stretch the scope of targets beyond their direct control. This includes emissions from their supply chain(s) and the lifecycle of their operations. Emissions along the value chain represent about 80 per cent to 95 per cent of total emissions which reveals a lack of transparency from companies across all sectors. Underestimation of the amount of generated emissions portrays a misleading picture of companies' carbon impact. Further, companies with high emissions can seek to offshore activities elsewhere in the supply chain as a solution to reduce their contribution to their national carbon footprint.

Many participants highlighted the adoption of low-hanging fruit in their carbon management. Organisations in my sample actively communicated their carbon emissions reduction targets and have set pathways toward decarbonisation in order to create specific corporate recognition without any substantive organisational change. This wait-and-see strategy allows organisations to postpone action, in anticipation of breakthrough technology. Their climate change responses aim at promoting their reputation by shaping perceptions of their stakeholders rather than making real efforts to reduce their impact on the environment.

On the other hand, in terms of a substantive strategy, science-based targets represent a valid and scientifically justifiable approach toward limiting climate change. Many companies in the sample have supported setting science-based targets as these could demonstrate a credible and robust commitment to climate change mitigation as well as provide a company with opportunities to show its support for climate action publicly. It also demonstrates leadership, giving companies the advantage of a head start in the transition to a low-carbon economy. Nevertheless, over the 2012 to 2016 period, none of the targets disclosed by my sampled companies exhibited a quantitative connect to the planetary boundaries framework. Most of their targets were science-referencing ones (targets set with an explicit commitment to considering ecological consequences of the corporate impact on climate change or targets with

a qualitative connection to planetary boundary framework) or non-science based targets (targets without any connection to the planetary boundary framework).

When asked why an organisation supported climate change initiatives, participants often indicated that it was the "right thing to do". Respondents expressed a sense of moral obligation to the country, society and their children to do the right thing and that social responsibility was deeply embedded in their corporate identity. Nevertheless, when it comes to the corporate responsibility to align with the internationally agreed methodology of setting science-based targets, it is a way to manage stakeholders' perceptions. Companies emphasise that the targets must be realistic and achievable. Company narratives revealed that organisations are balancing the need for social responsibility with economic considerations by implementing "low-hanging fruit" actions.

New Zealand has passed the Zero Carbon Act, which is in force from 2020. The Act introduces a target of net-zero carbon by 2050 for long-lived greenhouse gas emissions (Zero Carbon Act 2019). As the New Zealand Government continues to work to implement the Paris Agreement, and along with the Zero Carbon Act, companies expect to see more regulations to curb emissions-intensive activities. Companies set carbon targets with the aim of helping to avoid more stringent rules and also a carbon credits price increase. A small number of the studied firms had proactively researched and developed alternative operational processes, invested in renewable energy technology and electric vehicle fleets and provided incentives to steer everybody in their companies in the same direction in order to achieve stated climate change objectives. Despite the fact that purchasing carbon credits offsetting makes it easier for companies to continue with their practices rather than working towards changing them, large carbon-intensive companies prefer to focus on reducing their emissions by investing their money into research and development because their financial liability under ETS is significant. This is considered to be a substantive approach that companies choose to adopt.

My study showed mixed evidence of corporate climate change target setting and reporting. There were many examples given where motivations for change were balanced, such as financial concerns against social responsibility considerations, when weighing the appropriateness of an action. This strongly suggests that corporations use multiple strategies rather than a single strategy in regards to GHG emissions reduction target setting. Examples of this are the win-win relationship between commitment to increase GHG emissions performance and financial performance because of cost-savings, cost or litigation avoidance and revenue generation. Reduction in environmental impact benefits both the environment and the corporate bottom-line.

Additionally, many companies in my sample have joined organisations such as the Climate Leader Coalition and the Sustainable Business Council which represent opportunities for businesses to work together and learn from each other to reduce their emissions. Engaging with these types of environmental associations is believed to improve their corporate environmental reputation, which serves to enhance firm competitiveness, and could also be interpreted as increasing legitimation. Becoming a member of these coalitions does not ensure the company's commitment to an actual change towards a low-carbon economy.

9.6. Conclusion

In this chapter, empirical findings in corporate climate change target setting and reporting are critically discussed from legitimacy and institutional pressure logic viewpoints. For some firms in my study, climate change mitigation represented a substantial approach. These corporations had proactively researched and developed resilient operational processes, invested in renewable technology, in general, demonstrating their commitment through concrete action. However, other companies pursued a symbolic approach, focused mostly on the low-hanging

fruit, which is relatively easy to accomplish to reduce emissions and at the same time, saves costs.

Following the legitimacy point of view, climate change mitigations, in general, and emissions reduction target setting and reporting in particular, will not make any significant change in GHG emissions performance. Communicating climate change commitment might not be reflected in concrete action on climate change issues, hence having no impact on an absolute GHG emissions reduction. Furthermore, the achievements of corporate climate targets do not necessarily mean that such achieved targets are good enough and adequate for the corporation to protect the environment. It is meaningless if these organisations do not take into account the ecosystem capacity, which helps us stay within the 2ºC limit.

In terms of institutional theory, my study found mixed pressure factors for adopting climate change mitigations amongst the sampled companies. There is an increase in the number of companies reporting and also setting climate change targets (in line with the Paris Agreement international goal) due to increases in regulatory and institutional pressures. In addition, some organisations in my study exhibited mimetic isomorphism in complying with institutional norms and pressures and were motivated to comply in order to maintain their legitimacy. The following chapter concludes this thesis by reiterating the key findings, identifying contributions to knowledge, the limitation of the study and future research directions.

CHAPTER 10 – CONCLUSION

10.1. Introduction

Before carrying out this research, I wondered whether setting corporate science-based targets for climate action (which are in line with the 2015 Paris Accord to keep our average global temperature increase to less than 2ºC by 2100) is sensible. Unfortunately, despite national responses and business responses to climate change, progress is miniscule. I can only see signs of the escalating catastrophe. For example, the recent and unprecedented Australian bushfires in 2019 killed more than 15 people, 1.25 billion native animals, destroyed hundreds of homes and burned millions of acres of forest (WWF 2020). Although GHG emissions do not cause the bushfires, it continues to play a demonstrated role in increasing average and extreme temperatures and contributes to the extraordinarily dry conditions affecting Australia. We expect climate change to continue to lengthen the fire season. The devastation is just one out of many observable examples of global climate change effects on the environment. These appear certain to only increase in number if we surpass the 2ºC tipping point.

New Zealand's Nationally Determined Contribution (NDC) under the Paris Agreement set a target of reducing 2050 emissions to 50 percent below the 1990 level. The IPCC's Fourth Assessment Report (2014) stresses that a reduction in global CO_2 emissions of 50 percent to 85 percent by 2050 is required to keep the global average temperature increase to 2ºC to 2.4ºC above pre-industrial levels. This means that the 50 percent reduction target represents the lower end of what is considered necessary to meet the global target (Royal Society of New Zealand 2016). New Zealand's target seems to be less ambitious, and designed to ensure economic viability. The Climate Action Tracker (2019) argues that this commitment is insufficient to meet New Zealand's fair-share range and is not consistent with the Paris Agreement. If all

government targets were in this range, average global warming would exceed 2^{o}C, and could be up to 3^{o}C.

Despite the introduction of the New Zealand Carbon Act since November 2019, New Zealand businesses have so far failed to make appropriate responses to reduce real impacts on climate change. The Act sets ambitious climate targets; to reduce all GHG (except methane) to net-zero by 2050, and to reduce emissions of methane to within the range of 24 percent to 47 percent below 2007 levels by 2050. Perhaps unsurprisingly, targeted change seems set to occur only in very small increments.

In parallel , some companies are setting emissions reductions targets which will help contribute to broader national and planetary level improvements. The planetary boundaries are an estimation of a safe operating space for humanity with respect to the functioning of our planet (Rockstrom *et al*. 2009). However, the majority of companies seem to have set their emissions reduction targets in a way that is unchallenging of traditional corporate notions of progress and growth with a lack of due consideration for the global ecological context.

The overall aim of this research was to critically investigate and analyse organisational aspirations and claims for climate change-related management and strategies. Institutional and legitimacy theories were used to examine the sense-making of greenhouse gas emission reductions targets, the initiatives that are underway at the largest NZX listed 50 companies and ultimately, the challenge associated with reducing emissions in the near future.

This concluding chapter provides a summary of the main research findings, which are briefly revisited in Section 10.2. In Section 10.3, the contributions to knowledge provided by this study are highlighted. The limitations of the study and future research directions are acknowledged in Section 10.4. Finally, Section 10.5 makes concluding comments about the nature of business responses to the climate change challenge.

10.2. Review of Key Findings

This study focused on five specific research questions: (1) To what extent are corporate climate change targets science-based targets? (2) What are the corporate identities utilised in adopting climate change mitigation? (3) Why are New Zealand companies mitigating climate change? (4) Why are New Zealand companies setting and reporting corporate climate change targets? And (5) What are New Zealand's company managers willing to do and what are they not willing to do in setting and reporting climate change targets?

A sample taken from the top 50 listed companies (by market capitalization) that enjoyed consecutive membership in the New Zealand Stock Exchange 2012 to 2016 participated. The participants included senior managers with designated responsibility for climate change action and environmental sustainability efforts within the sample organisations. The methods selected for data collection were document analysis (content analysis and discourse analysis) from corporate annual reports and sustainability reports and qualitative semi-structured, in-depth interviews. These allowed respondents the freedom to discuss issues of the highest interest and most concern to them. Themes emerged from the analysis, revealed company perspectives and identified actions relevant to climate change and the setting of emissions reduction targets.

The document analysis data and interview data were then analysed to address the research questions. Analysis of the data revealed several diverse themes that were emphasised by companies in their reports and by interviewees. The themes themselves disclosed how similarly or differentially firms perceived the opportunities and challenges of emissions reduction target setting and reporting in relation to the organisation’s operations, and the array of reasons given to rationalise those positions.

10.2.1. Identifying whether corporate climate change targets are in line with the 2oC global climate change target and identifying corporate identities in adopting climate change mitigation

The first and second research questions are "to what extent are the corporate climate change targets science-based targets? and "what are the corporate identities utilised in adopting climate change mitigation?". These two research questions were examined in Chapter 6.

Corporate climate change-related information made publicly available in corporate reports are disclosed voluntarily. For the period 2012 to 2016, only 19 out of the 50 New Zealand companies in the sample reported climate information in their corporate annual reports and sustainability reports. In fact, the number of companies that have published climate-related information increased from nine companies in 2012 to 19 in 2016, indicating a growing awareness and recognition in the materiality of climate change issues. Information provided on climate change by companies in the sample is insufficient and inconsistent. However, the results of this investigation only assess whether company reports are presented in a transparent way. These results do not necessarily inform us of their actual emissions performance.

During the same period, these climate change reporters disclosed 61 emissions related targets. There is an upward trend in a number of organisations reporting targets, from five companies in 2012 to 13 companies in 2016. Of 19 climate reporters who set and disclosed targets, 13 appeared to place increased importance on setting targets. Nevertheless, none of these targets exhibited a quantitative connection to the planetary boundaries framework (science-based targets) over the same period. Most company targets are 'science-referencing' targets (those set with an explicit commitment that considers ecological consequences of the corporate impact on climate change or targets with a qualitative connection to the planetary boundary

framework). A small number of companies rely on non-science based targets (targets without any connection to the planetary boundary framework).

My sample showed characteristics where they represent themselves as responsible, knowledgeable, a protector and a provider. Under threats to company reputation (related to their possible negative contribution to climate change), presenting an image of a powerful and moral organisation can been interpreted as a legitimacy strategy. A legitimacy strategy strives to protect and increase the acceptance of companies in society by managing social perceptions that the company's actions are appropriate. Rhetorically, my sample constructed an image of themselves as legitimate through the legitimating practices of power (i.e., referring to themselves as knowledgeable and leaders) and by appeals to positive moral evaluation (i.e., as responsible and protectors). In my study, climate change issues carry positive associations for corporate identity. A "climate change leader, protector, provider, who is responsible and transparent" is likely to create positive emotional associations in both managerial interpretations and external stakeholder perceptions, and stimulate opportunity-seeking behaviour, as well as maintain economic and social legitimacy.

10.2.2. Identifying rationales for corporate climate change mitigation, setting and reporting corporate climate change targets

The third and fourth research questions are "why are New Zealand companies mitigating climate change?" and "Why are New Zealand companies setting and reporting corporate climate change targets?". These questions were explored in detail in Chapter 7 and Chapter 8.

The rationales for corporate climate change mitigation are principally focussed on regulatory compliance, social responsibility, business case and win-win scenarios, public relations-greenwashing, a balancing act and competitive advantages. The first driver of mitigating climate change is regulatory compliance. Companies refer to the need to comply with current

legislation such as the New Zealand Emissions Trading Scheme, Market Listing Rules and the Zero Carbon Act.

Reference to ETS compliance is particularly common among high emitters due to their great use of fossil fuels. Large carbon-intensive companies need to understand the emissions cost in order to invest effectively in carbon offsets because their financial liability is significant. Companies in my sample purchase voluntary carbon offsets to address some of their unavoidable emissions. The increasing carbon-related costs will be passed along to their customers through price increases. In addition, carbon credits form a new source of income as these can be sold on the market and thus provides companies with a new opportunity for profit and may generate a competitive advantage in a carbon-constrained future.

Market listing rules also obligate companies to be transparent about their emissions performance. However, it is voluntary for companies listed on the New Zealand Stock Exchange to publish full details on their GHG emissions. In the Zero Carbon Act, it is also not mandatory for companies in New Zealand to have a climate-related report.

With the target of transition to a net-zero emissions economy by 2050, the Zero Carbon Act might have a great impact on businesses as it introduces a cap on emissions and increases emissions pricing. It has been suggested that this will raise prices to approximately NZ$100 to NZ$275 per tonne of emissions. High ETS prices increase financial pressure on companies which perhaps will lead to changes in corporate behaviour. However, there is concern over a politically motivated constraint that prevents the introduction of a carbon price equal to the full social cost of emissions and also the absence of a commensurate obligation for the agriculture sector under the ETS.

Another motivation for reducing emissions is social responsibility. However, the findings of this study reveal mixed motives, where social responsibility was an important consideration in

corporate action along with other rational and economic motives. Although response to the climate change issue could be seen as supported by leaders of the organisations, it is also a struggle to get other members of the organisation to share the same view, thus making it difficult to effect changes in corporate operations.

Climate change is presented as a win-win situation throughout corporate reports and interviews. The win-win scenario is where both organisations and the environment benefit from the company's emissions performance. A financial win for the organisation is the most-often stated rationale. Companies mostly focus on 'low-hanging fruit' by adopting measures that generate more efficient use of energy. Reducing emissions is relatively easy to accomplish and at the same time, saves costs.

Public relations through glossy reports and activities showcasing a company's social and environmental good deeds is also utilised. This typically leaves out their companies' emissions impact as a whole, however. Climate change reporting is used to manage public perception. First, they show their commitment to climate change with the aim of retaining their license to operate. Another way of managing their reputation with stakeholders is "excuse-making". For example, companies explain cannot control the electricity grid, and therefore, the carbon dioxide content of their energy emissions.

Companies may employ the "soft strategy", which is to juxtapose emissions with the growth of air traffic and increased tourism. They do so via balancing, a strategy used to articulate climate change mitigation as an integration of companies' economic, social and environmental goals. In this case, the urgency of emissions reduction is downplayed by foregrounding the economy and demand.

Climate change mitigation may also bring about competitive advantage, which can enhance company reputation with shareholders, customers and other external stakeholders. Companies

emphasise that innovative strategies improve their competencies as a result of the development of new environmental technologies and products that reduce emissions. In addition, outsourcing pollution may make organisations' efforts in reducing emissions look more impressive. These companies have effectively outsourced their carbon emissions overseas, by importing materials, and other goods from factories in other countries, rather than producing them domestically.

The rationales for corporate climate target setting focus on the business case, public relations and the right thing to do. A target is essential for informing companies' strategic decisions. By setting a climate-related target, companies are ensuring their operations remain efficient and are building resilience against a future where resources, particularly those derived from fossil fuels, will become increasingly scarce and expensive. Climate-related targets also drive the development of new products and the adoption of the cleaner manufacturing processes. Additionally, climate-related targets assist the investment decisions related to emissions reduction. Targets could also help companies to understand the trends of the future market by shifting the focus of a business towards the development of innovative solutions and new opportunities.

Another common theme in relation to organisational rationales for setting climate change targets is to provide credibility to stakeholders. Without reporting, stakeholders may take a poor view of companies that do not do their share to reduce emissions. Setting climate targets allow businesses to prove themselves to be forward-thinking, sustainably-minded companies to their stakeholders, increase their resilience against upcoming regulation, and also improve their brands' reputations for sustainability which are of paramount importance.

Another common pattern of response in setting a climate science-based target is the moral case for action; doing the right thing. These targets should be based on the fair-share of each

company to address climate change. The efforts of setting a science-based target perhaps are necessary but not sufficient. There is also considerable political and market uncertainty at the moment, which means that many businesses are adopting a wait-and-see approach before making any decisions. A science-based target may be seen as a rhetorical commitment without actually being backed up by empirical improvement. This only provides a cover for inadequate business action on climate change, and perhaps reveals that business actions are not aligned with their science-based targets commitment.

10.2.3. Identifying insightful perceptions from corporate managers influencing their corporate emissions reduction target setting and reporting practices

The last research question is "what are New Zealand company's managers willing to do?" and "what are they not willing to do in setting and reporting climate change targets?". This question is addressed in Chapter 8.

Despite the effectiveness of the science-based targets that provide companies with a clear and meaningful route to reduce greenhouse gas emissions, companies may feel reluctant in committing to them. Indeed, once they set science-based targets, some of the carbon-intensive companies might move towards a radically different logic/business model which requires them to eliminate most emissions.

Setting ambitious targets to reduce corporate climate change impact has been the principal way for companies to show the public their commitment to helping solve the climate change problem. However, a widely accepted definition of ambitious corporate emissions reductions targets does not seem to exist. This term is unquestionably ambiguous. Without setting science-based targets, uncertainty and arbitrary actions remain in formulating climate-related targets.

Many companies do not stretch the scope of targets beyond their direct control, including emissions from their upstream and downstream from their supply chain and lifecycle of their

operations. Emissions along the value chain (Scope 3 emissions) may represent a company's biggest GHG impacts. Companies do not fully disclose their GHG emissions, which reveals a lack of transparency from companies across all market sectors. Underestimating the amount of emissions generated portrays a misleading picture of companies' carbon impact. Lack of transparency does not allow stakeholders to make a confident evaluation of whether the targets have been fully covered and eventually, whether the targets have been delivered.

10.3. Contributions to Knowledge

This research has the intention of making several novel and valuable contributions to the literature, the theoretical development of as well as practices in corporate climate-related target setting and reporting. Furthermore, in the context of corporate GHG emissions, this study enhances the understanding of rationales for corporate GHG emissions reduction targets setting, the sense-making of these targets and the challenges associated with reducing emissions in the near future.

One of the research aims was to contribute to the literature focussed on the development of corporate climate change targets. This study is one of few studies to investigate whether corporate climate change target setting is linked with climate threshold. The previous studies have examined a series of climate change target characteristics (e.g., the type of target, target scope, target ambitiousness and timeframe) associated with environmental performance. However, the meaningful interpretation of corporate climate change target disclosures by stakeholders is also critically important as how companies use the concept of climate change tipping point to define their targets is relatively unacknowledged. There are a small number of studies quantitatively measuring the impact of company activities on our planet's ecological system with the exception of some companies that voluntarily report their on GHG emissions (Whiteman *et al.* 2013). Corporate climate change targets are only meaningful if they are set

based on the fair share of the total GHG emissions reductions required to meet a given future goal.

Although many companies in the sample have acknowledged that science-based targets could demonstrate a credible and robust commitment to climate change mitigation, for carbon-intensive companies, they are very reluctant in committing to science-based targets as it requires them to move towards a radically different business model. Many organisations do not have a clear idea of how to achieve them. They are lack of time, financial resource, guidance of setting science-based targets (e.g., agriculture sector) and lack of understanding in the process of setting science-based targets. Companies prefer to set their own targets that they can control rather than setting a science-based target and being reproached for not doing enough. Alternatively, without any evidence of the connection with science-based targets, many companies claim their target is an appropriate mix between ambitious and realistic targets. This is motivated by legitimacy-seeking desire. Setting "ambitious" targets enhance the relationships with investors, improve marketing and better manage their social contract. My study indicates that managers have incentives to report their GHG emissions targets, so that the information released is positive.

The findings of this study reveal the extent to which corporate climate change target setting, among New Zealand leading firms, is connected to the broader planetary boundaries level (Rockstrom *et al.* 2009, Haffar & Searcy 2017, Whiteman *et al*. 2013, Bjorn *et al.* 2017). A large number of New Zealand companies in my sample failed to consider how their organisational impacts were contributing to the climate change tipping point. Without science-based targets, these companies have no way of determining whether their corporate sustainability efforts are contributing to ecological sustainability and resilience enhancement (Haffar & Searcy 2017). Ultimately, these companies might mislead in reporting their performance evaluation and monitoring information. This study highlights the need for a more

science-based approach to climate change target-setting. Companies should consider their contributions to the climate change threshold in order to align their corporate strategic priorities with ecological system priorities. These may encourage companies to refer to the threshold in their reports and establish a link between company impact and the ecological threshold, ultimately to move toward a more science-based evaluation of the climate change impact of their operations.

My research also helps in understanding not only the factors and rationales embedded in the climate target setting and reporting but also provides greater insights into corporate willingness to publicly report (and not report) their GHG emissions targets and performance against established targets. Afterall, it is a voluntary reporting regime in spite of the growing concern of society and regulatory pressures in recent years about climate change and the Paris Accord's global average temperature goals. Building on Milne et al. 2004, Tregidga & Milne 2006, Haffar & Searcy 2017, my study extends the literature by investigating corporate climate target setting and reporting..

Another contribution to the current literature studies on corporate climate change reporting exists in relation to the production of corporate climate change mitigation messages and an analysis of the messages themselves. My work adds to and extends Tregidga & Milne (2006), Milne et al. (2004) which analyses the construction of corporate sustainability messages. My research provides an analysis of the construction of the climate change mitigation and climate change targets messages within corporate public reports which result in valuable insights into organisational reporting, in particular, an investigation which analyses the meaning of corporate GHG targets.

This research adopts a mixed methods approach, including content analysis, discourse analysis and fieldwork study (semi-structured interviews) focused on a small sample of the NZX largest

50 listed companies. Particular attention is paid to managerial insights and perceptions in their corporate climate change mitigations. While previous studies have mainly used CDP data or have undertaken a longitudinal approach to examine a large archive of sustainability reports (e.g., Dahlmann et al. 2015, Ioannou et al. 2015 Bjorn et al. 2017, Antonini & Larrinaga 2017, Liu & Yang 2017, Doda et al. 2016), the scope and focus of this study are unique.

Furthermore, the study contributes to the theoretical development which unpacks and illuminates the decision-making behaviours on corporate climate change target setting and reporting. This research also extends previous work by explaining the connection between legitimacy theory and institutional theory via substantive and symbolic corporate climate change target setting and reporting strategies (Hoffman 2006, Hrasky, 2011, Herold *et al*. 2018, Dahlmann *et al.* 2017).

This study utilises valuable insights from institutional theory to explore and understand the institutional pillars (regulatory, normative and cognitive pressures), their connectedness and corporate behaviours of setting and reporting emissions reduction targets. The findings reveal that a large number of companies (31 of 50 sampled companies) failed to disclose any climate-related information in their reports in a period from 2012 to 2016. This indicates that companies experience at best very subtle and nudging pressures at the field level. New Zealand signed up to the Paris Agreement in 2015 in an effort to keep global warming well below 2ºC and set a target of reducing 2030 emissions to 30 percent below the 2005 level (or 11 percent below the 1990 level). The domestic targets set by the New Zealand Government are not in line with the Paris Agreement, however. Climate Action Tracker (2019) notes that if all government targets were in this range, the average global warming increase will reach somewhere between 2ºC and 3ºC. New Zealand experienced a lack of stringent legislation, especially with the ETS and Zero Carbon Act. None of the current regulations require companies to set and report their carbon reduction targets in line with planetary boundaries. In addition, some companies

appeared reluctant to engage with industry associations and interest groups such as the Climate Leader Coalition or the Sustainable Business Council. It appears they hoped to improve their corporate environmental reputations and increase their legitimation without taking any radical change in corporate operations. In my study, there is also very limited evidence that the companies in my sample engaged in mimetic behaviour of a successful model. These firms do not undertake the incremental changes in their activities necessary to reduce emissions because of a lack of clear domestic regulations, normative pressures and shareholders' pressure. Stakeholders (e.g., government, industry associations, and institutional investors) should exert pressure for better and more detailed disclosure of climate change target setting and reporting from business firms.

This study provides a comprehensive and integrated application of three different elements of legitimacy theory (pragmatic, moral and cognitive legitimacy) (Suchman 1995). The study shows companies are more focussed on pragmatic legitimacy than on moral and cognitive legitimacy. The win-win relationship between commitment to increased GHG emissions performance and financial performance is often emphasised in this research. In my study, the companies sampled emphasise the role of setting ambitious targets which will give them improved investors' relationships, with management of their marketing and social contracts. Furthermore, attending to the ethical aspects of environmental responsibility are reflected in the positive normative approval of the organisation. However, the challenge of getting everybody on board is a barrier that a company is aware of in affecting changes in corporate operations and transforming traditional business activities. Companies appear more inclined to adopt a "wait and see approach" hoping they could maintain legitimacy until there is a more unambiguous indication of political commitments and consumer demand. As a consequence, companies are not motivated to bring about the structural and cultural changes necessary to

facilitate emissions reductions target setting and reporting. At this stage, setting and reporting a climate change target is a nice thing to do, but not a must-do.

I also recognise this study's contribution to the practice of corporate target setting and reporting. My findings indicate that even amongst the 50 biggest listed companies in the New Zealand Stock Exchange, 31 of the 50 companies in my sample did not report anything about target setting for the period 2012 to 2016. This does not indicate that those companies do not measure and mitigate climate change. It perhaps indicates that some companies set climate change targets but choose not to report the data because they are doing so internally. In order to manage the relationships between their business and stakeholders, companies need to increase the level of reporting transparency. Transparency helps businesses build trust with their stakeholders. It allows external stakeholders to evaluate corporate activities and to take them into account in their own decision-making about the firm. Companies should consider climate change as a material issue that has a significant and direct impact on their operations. The generation of this climate-related information is useful for decision-making both by companies and their stakeholders. New Zealand companies might have not faced the same level of stakeholder pressure as compared with overseas counterparts (e.g., the UK and European countries) but it does not mean the level of stakeholder pressure has not been increasing. Given the physical and financial impacts of climate change on business operations, shareholders seek higher corporate standards in order to manage climate-related risks and opportunities, thus adding to shareholder value.

10.4. Limitation of the Study and Future Research

The study is not without its limitations. These, combined with the findings of the research, present a number of potential avenues for future research.

My findings (from document analysis) reveal that a majority number of companies sampled (31 of 50) have not disclosed any climate-related information. These findings could be explained by the nature of the New Zealand political context at the time the data were collected. The National-led Government which promoted competitive enterprise and economy held power between 2008 and 2017. In the contemporary New Zealand context, the National Party is more uncertain and sceptical about climate change and prioritises climate change to a lesser degree that the Labour Party, which is more likely to accept the reality of anthropogenic climate change and recognise its causes and impacts on our climate. However, in 2017 the Labour Party was elected, and gave greater priority to climate change in their political work than the previous National-led government. From 2017 to 2020, the Labour Party held power in a minority government made possible by forging a coalition with the Green Party (and the New Zealand First Party).

As part of that coalition, the New Zealand Parliament passed the Zero Carbon Act in 2019 (seen as a landmark commitment to action on climate change), established the Climate Change Commission, and introduced a falling cap on emissions permits issued under the Emissions Trading Scheme. This was set at 453 million tonnes for the 2021 to 2025 period, with an additional interim cap of 160 million tonnes during the same period for industries covered by the Emissions Trading Scheme. This represents an effective annual target of 70.8 million tonnes per year (MfE 2020). The Labour Party recently won a second term (2020 to 2023). Future research could explore the causes and consequences of the variation in corporate climate change strategic responses and communication by divergent climate policy approaches from

the two dominant political parties. Additionally, field-level dynamics, more particularly, regulatory, normative and cognitive pillars, deserve further study because they form a link between changes in corporate climate change response and changes in system processes. In addition, examination of how climate change target setting and reporting is spreading through and across industries, and the bases on which this is occurring are necessary. Further, the trouble with climate change is that demanding action is easy, as is legislating to demand targets. The big question of whether the heightened rhetoric will be accompanied by the action necessary to deliver these climate change targets would also be a worthy focus for further research.

My study is only limited to interviews with climate reporters who accepted an invitation to participate, though the majority of companies sampled are non-climate reporters. Further study could investigate rationales for companies who are not climate reporters. Future studies should focus on understanding the specific factors and organisational dynamics that are associated with a lesser likelihood of disclosing climate-related information. The adoption of a science-based target setting procedure and reporting as well as the climate change mitigation practices should also be examined. Setting a GHG emissions reduction target is essential to drive companies' actions toward reducing their emissions. This is because companies need targets to measure against their emissions performance. Indeed, without a target, senior managers have nothing to report back to top management. Measuring and reporting GHG emissions cost companies money. A further complication is that companies might set targets that they choose not to report, even though they have the necessary data internally, choosing not publish. In this case, companies do not have to report climate change information to begin with, but management will have the information available if there is external demand for such information (Hedberg & Malmborg 2003). Hedberg and Malmborg (2003) also demonstrated

that reporting helps companies learn about themselves and to see what has actually been accomplished in the organisation.

My current approach of interpretive constructivism to analyse corporate reports provides a view on what firms and their managers have to say and write about corporate climate chagne target setting and reporting. In other words, what organisations and managers mean when they refer to their climate change targets. A future study might choose a critical approach instead which would be concentrating on how the organisation serves to position their power in the discursive debate on climate change mitigation and how the discursive identity constructed works to maintain a legitimate and influential right to speak by looking at New Zealand corporate submissions to the Climate Change Comission on the draft emission budgets and the commitments to emissions targets under the Paris Agreement and to net zero emissions from 2050.

My research plan is to conduct original research of significance that promotes the advancement of knowledge in the field of corporate climate change mitigation and adaptation. Publications in peer-reviewed journals out of my PhD thesis within the next two years is my ultimate goal. I am working on my first paper to investigate the gap between carbon management targets and performance within the context of scientific requirements and political pressures. My second paper will focus on institutional logics to understand reasons for the variation in corporate climate change target setting and reporting. And my third paper will investigate how New Zealand organisations represent themselves in relation to corporate climate mitigation in publicly available corporate reports from 2016 to 2020.

10.5. Conclusions

"We have been putting things off year after year. We've been raising targets, saying 'oh well, if we do it in the next 20 years…' the moment of crisis has come."
Sir David Attenborough

Before I came to New Zealand to do my PhD, I thought naively that most of businesses care about the environment since I read the good news about what actions they have taken to protect environment. However, now, I have learned a painful lesson that most companies care about things that matter to their bottom line, and these are not always consistent with meeting scientifically relevant targets. I came from Vietnam where the Government has been promoting social-economic development by attracting vast amounts of foreign direct investment, and yet also consuming vast amounts of energy and natural resources. These investments are driving the Vietnamese economy but they are incredibly energy-intensive industries and economic growth is taking its toll on our country's eco-systems and draining our nation's natural resources. I hoped that a case study of New Zealand companies would be a great lesson for Vietnamese companies to learn how to reduce emissions and protect the Earth. However, I am wrong. Corporate minds are the same everywhere, to maximise shareholders' values by maximising their extractions of resources, including fossil fuels. Although New Zealand could have a better environmental enhancement and preservation programs and the small population, the government is not taking actions strong enough to mitigate climate change. And neither are New Zealand companies.

I concluded this chapter by quoting Sir David Attenborough "We have been putting things off year after year. We've been raising targets, saying 'oh well, if we do it in the next 20 years..' the moment of crisis has come" with my expressing concern for corporate climate change target setting and reporting. The ability to mitigate climate change and meet the average global temperature target is far from achievable, and perhaps impossible. Government appears to act

as if climate change is not real. Emissions reduction targets under the Nationally Determined Contribution is merely the minimum Government needs to achieve. Companies fulfil their duty to maximise shareholders' values by maximising their extractions of resources, including fossil fuels. We also cannot rely on fellow human beings, because even people who are well aware of the facts still contribute to global warming.

As a result of COVID 19-lockdown measures, global emissions in 2020 were expected to fall by seven percent. Yet, to keep global warming below the 2ºC limit, we would need to realise a similar drop every year for the next decade whilst using humane methods instead of deadly viruses (Mommers 2020) to stimulate change. If our generation fails to respond forcefully to the dramatic challenge of climate change, the next generation will likely witness the most severe impacts of climate change within their lifetimes. Our children and grandchildren will have to live fighting for their survival. It is not too late, however. Globally, governments, businesses, societies and individuals all can do our parts to cut GHG emissions now so that the average rise in the global average temperature is limited to a maximum of 2ºC. People in every economic sector, in every nation, should search for and find ways to achieve the maximum possible cuts in greenhouse gases emissions in order to rescue the planet. Coming generations deserve to live in a world free from the life-threatening effects of climate change. What we are doing now is obviously not enough. However, I hope it may be not too late to avoid the worst effects of climate change. We might have to learn to adapt to climate change and learn to live with climate change.

APPENDIX

Section 1-Initial Email:

College of Business and Law

Hang Pham, PhD Student

Department of Accounting and Information Systems

Tel: +64 3 981 7957, Mobile: 027 596 6868

Email: phuonghang.pham@pg.canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

To Whom It May Concern:

My name is Hang Pham and I am a PhD student at the University of Canterbury writing to invite you to participate in my research project.

The aim of this project is to investigate organisational identity and actions in regard to climate change mitigation. The research will seek to understand the managerial perceptions of why there is divergence in corporate Greenhouse Gas emission reduction target setting and reporting and what is needed to encourage constructive corporate action against climate change in order to be in line with the internationally accepted target of limiting average global temperature rise to less than 2^{o}C by the end of this century.

This research would give you the opportunity to express your views on what currently influences GHG emission target setting and reporting practices and what you see as being potential or likely influences, if any, in the future.

I would appreciate the opportunity to interview either yourself or an individual within your organisation that holds a role relating to sustainability practices. Your contribution will enrich the research ensuring the results are of value for business entities within New Zealand as well as for policy and academia. If you are interested in being involved in this research I will send you more detailed information. Furthermore, I will ensure I am available via telephone to discuss the project if required.

The project is being carried out under the supervision of Professor Markus Milne and Associate Professor Michaela Balzarova, contactable at markus.milne@canterbury.ac.nz, phone: +64 3 364 2624 and michaela.balzarova@canterbury.ac.nz phone: + 64 3 3693122. They will be pleased to discuss any concerns you may have about participation in the project.

Your help would be invaluable in making my PhD research possible. Thank you very much for your time and I look forward to a positive response.

Yours sincerely,

Hang Pham

PhD Candidate

College of Business and Law

University of Canterbury

Section 2-Participant Information Sheet

College of Business and Law

Hang Pham, PhD Student

Department of Accounting and Information Systems

Tel: +64 3 981 7957, Mobile: 027 596 6868

Email: phuonghang.pham@pg.canterbury.ac.nz

Rationales of Corporate Emission Reduction Target Setting: An Investigation

PARTICIPANT INFORMATION SHEET

Introduction

I am a PhD student in the Department of Accounting and Information System, School of Business and Law, University of Canterbury.

Corporate environmental targets are supposedly designed to achieve actual reductions in corporate environmental impact. Companies might consider environmental targets an important strategic and operational planning tool. In addition, environmental targets are indicator of future managerial plans which are of political importance. In Paris 2015, 195 countries agreed to limit global warming to no more than 2^{o}C. There is an increasing number of the world's largest companies publish targets to reduce their carbon emissions. In New Zealand, the frequency and likely the quality of corporate responsibility reporting is lacking. It attempts to address the inadequacies of corporate responsibility reporting in New Zealand, the Corporate Governance Code introduced by the New Zealand Exchange was revised in 2017.

My PhD thesis is seek to understand (1) how is corporate climate change mitigation constituted; (2) How is corporate identity in relation to climate change mitigation constructed? And (3) How is corporate intention in setting your emission reduction targets, i.e., whether corporate emission reduction target setting is in alignment with the internationally accepted 2^{o}C target?

Desired Participants

I would like to invite you to participate in this research. The research primarily involves interviews of senior managers of New Zealand top 50 companies who enjoy the consecutive membership on New Zealand Stock Exchange from 2012 – 2016. They are persons who initiate climate change initiatives at the companies or who is responsible for continuing or looking into organisational climate change actions. Where possible and appropriate, they are persons who are more likely to have knowledge, authority and key resources to implement divergent organisational change.

Interview Schedule

A list of semi-structured interview questions will be sent to the interviewees at least 2 days prior to the interview. It is envisaged that the interviews will last about 45 to 60 minutes. The time and location of the interviews will be arranged to the interviewees' convenience. The interview will be audio recorded and transcribed afterwards.

Data Analysis and Reporting

These transcribed interviews will be analysed and form the basis of the findings of my research. In addition, it is intended that data and results from the interviews will be used for publications in scholarly journals, presentation at academic conferences and potential reports and discussion papers to inform relevant policy planning and regulatory processes. At the conclusion of the project, a summary of findings will be sent to all the interviewees. I hope you will find this research of value to you.

Contact Details

If you wish to particpate in this research or desire further information, please contact me by email at phuonghang.pham@pg.canterbury.ac.nz (mobile number at 0273338888) or my primary supervisor Professor Markus Milne at markus.milne@canterbury.ac.nz (+64 03 3642987) or my second supervisor Associate Professor Michaela Balzarova at michaela.balzarova@canterbury.ac.nz (+ 64 3 3693122)

Section 3-Interview Questions

SECTION A: INTRODUCTION

Introduction

- Can you please introduce yourself and describe your role within your organisation?

General Opinion on Climate Change

- Do you think climate change is a major issue? Why do you think so?
- Eighty percent of global energy comes from fossil fuel and 20 percent of NZ emissions come from transport. What role does your sector play in mitigate the climate change? (and if so, what sorts of actions do you think New Zealand should be taking?)
- What is your general opinion of the Government's announcement on the Zero Carbon Bill last week which will set target in Law net-zero by 2050 for other GHG emissions?
- How this Bill will impact on your business and how would you prepare for this legislation change?

SECTION B: MANAGERIAL PERCEPTIONS AND ORGANISATIONAL PROCESSES THAT INFLUENCE CORPORATE GREENHOUSE GAS EMISSIONS REDUCTION TARGET SETTING AND REPORTING PRACTICES

GHG Emissions Measurement (Inventory)

- When did you start measuring GHG emissions?
- Which factors, had influenced/ received your organisation attention to start GHG emissions measurement? And Why?
- What are your organisation's purposes for having a GHG inventory?
- Can you describe the emissions measurement system at your organisation? How does it work and how has it evolved?
- What is the biggest challenge in measuring your emissions?

GHG Emissions Management Systems

- What does the management of emissions mean to your organisation?
- What is your biggest challenge in managing GHG emissions?
- What role do targets play in managing emissions?

GHG Emissions Target Setting and Reporting

Setting target is the main way for a company to show their commitment in dealing with climate change. In this section, the role and the effectiveness of target setting and emissions management will be focused on.

- Do you see any differences between these types of targets: absolute, intensity and science-based? How and Why?
- What does effective target setting mean to your organisation?
- Which sources of pressure do you think can motivate companies to set a climate change-related target (14 out of 50 largest listed companies on NZX set climate change targets)?
- Your organisation has a target of reducing carbon emissions by X percent by 2020. How do you set them? (in terms of what is the basis of selecting the level of target of

X percent for which scope, what baseline year to compare future emissions with, in which year target will have to be achieved)

- Can your organisation keep growing and expanding your business growth while reducing your absolute emissions of X percent in order to achieve your 2030 targets?
- Does something need to change radically at a business to achieve the target?
- Committing commitment is a critical issue, even for Government in the international political debate on climate change. Even New Zealand target is not in line with science-based requirement (to limit global warming less than 2°C), but actually could reach over 2°C and up to 3°C warmers (According to Climate Action Tracker). Some claim that it is the trade-off between economic growth and emissions reductions. Do you think it is the reflection of the same thing with your organisation?
- How does public reporting of carbon footprints, targets and achievements work in practices? Are these things companies choose not to publicly report? And if so, why?
- What is your biggest challenge in setting the emissions reduction target?

Science-based target

According to the Paris Agreement, we have to half our emission every decade in the next three decade to be able to limit our temperature rise less than 2°C.

Undoubtedly, we all agree that corporate reporting only on trends in their GHG emission performance is meaningless if the ecosystem capacity is not taken into account (i.e., how much the world's carbon budget we have left and how much emissions should an individual organisation be entitled to emit?).

- Regarding the timing issue to achieve global emissions reduction, we need to peak our global emissions by 2020. Otherwise, it will carry us to a very dangerous condition. Does your organisation's response is immediate, fast and sufficient enough to help us meet the Paris Agreement?
- To meet 2°C targets, we have to keep 80 percent of fossil fuel under the ground. What will be the future of your organisation if it is the case to save us?

Others questions

- What would you recommend New Zealand's policymakers in terms of allowing business making a meaningful target setting and reporting?

Section 4-Consent Form for Participants

College of Business and Law

Hang Pham, PhD Student

Department of Accounting and Information Systems

Tel: +64 3 981 7957

Email: phuonghang.pham@pg.canterbury.ac.nz

Rationales of Corporate Emissions Reduction Target Setting: An Investigation

Consent Form for Participants

I have read the Information Sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:

- ☐ I have been given a full explanation of this project and have had the opportunity to ask questions.
- ☐ I understand what is required of me if I agree to take part in the research.
- ☐ I understand that participation is voluntary and I may withdraw at any time without penalty. Withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.
- ☐ I understand that any information or opinions I provide will be kept confidential to the researcher and her supervisors, Professor Markus Milne and Associate Professor Michaela Balzarova and that any published or reported results will not identify the participants.
- ☐ I give consent for the name of the organization being identified within these publications.
- ☐ I understand that a thesis is a public document and will be available through the UC Library.
- ☐ I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form and will be destroyed after ten years from the completion of the research.
- ☐ I understand the risks associated with taking part and how they will be managed.

- ☐ I understand that I can contact the researcher, Hang Pham at phuonghang.pham@pg.canterbury.ac.nz or her supervisors Professor Markus Milne at markus.milne@canterbury.ac.nz or Associate Professor Michaela.balzarova@canterbury.ac.nz for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz)
- ☐ I would like a summary of the results of the project.
- ☐ By signing below, I agree to participate in this research project.

Name:_____ Signed:_____ Date:_____

Email address *(for report of findings, if applicable)*:

If you agree to participate in the study, you are asked to complete the consent form and return it, via email: phuonghang.pham@pg.canterbury.ac.nz

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to the Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800 Christchurch (human-ethics@canterbury.ac.nz)

Thank you very much for your consideration and I look forward to hearing from you.

Yours sincerely,

Hang Pham

PhD Candidate

Department of Accounting and Information Systems

University of Canterbury

Section 5-An overview of the research participants designated responsibility within their respective organisations

Number of Respondents	Research Participants Job Title/Designated Responsibility
2	Chief Executive Officer
1	General Manager
14	Sustainability Manager
5	Environmental Manager (Climate Change focus)
2	Operational Manager
3	Investor Relations Manager
1	Technical Manager
1	Corporate Scientist

Section 6-Organisations Invited to Participate and their Responses

Contacted Organisations	Sector	Industry Group	Response
CEMARS	B Corps	Sustainability Consultancy	Agreed to Participate, Interviewed
Thinkstep Australasia	B Corps	Sustainability Consultancy	Agreed to Participate, Interviewed
Spark New Zealand	Communications	Telecommunications	Agreed to Participate, Interviewed
Chorus	Communications	Telecommunications	Agreed to Participate, Interviewed
Kathmandu	Consumer Discretionary	Apparel and Textile Product	Agreed to Participate, Interviewed
Air New Zealand	Consumer Discretionary	Passenger Transportation	No Response
Sky City Entertainment	Consumer Discretionary	Gaming, Lodging and Restaurant	No Response
Restaurant Brands	Consumer Discretionary	Gaming, Lodging and Restaurant	Declined to Participate
Fonterra	Consumer Staples	Consumer Products	Agreed to Participate, Interviewed
Warehouse	Consumer Staples	Retail	Agreed to Participate, Interviewed
Synlait	Consumer Staples	Consumer Products	Agreed to Participate, Interviewed
PGG Wrightson	Consumer Staples	Distributors-Consumers Staples	Agreed to Participate, Interviewed
Sanford	Consumer Staples	Consumer Products	No Response
Delegat	Consumer Staples	Consumer Products	Declined to Participate
Z Energy	Energy	Oil and Gas	Agreed to Participate, Interviewed
New Zealand Refining	Energy	Oil, Gas and Coal	No Response
Precinct Property	Financials	Real Estate	Agreed to Participate, Interviewed

Contacted Organisations	Sector	Industry Group	Response
Goodman Property	Financials	Real Estate	Agreed to Participate, Interviewed
Kiwi Property	Financials	Real Estate	Agreed to Participate, Interviewed
Tourism Holdings	Financials	Speciality Finance	Agreed to Participate, Interviewed
Property for Industry	Financials	Real Estate	No Response
Fisher and Paykel	Healthcare	Medical Equipment and Devices	Agreed to Participate, Interviewed
Ryman Healthcare	Healthcare	Healthcare Facilities and Services	No Response
Summerset	Healthcare	Healthcare Facilities and Services	Declined to Participate
New Zealand Post	Industrials	Transportations and Logistics	Agreed to Participate, Interviewed
Auckland International Airport	Industrials	Transportations and Logistics	Agreed to Participate, Interviewed
Freightways	Industrials	Transportations and Logistics	Agreed to Participate, Interviewed
Mainfreight	Industrials	Transportations and Logistics	No Response
Port of Tauranga	Industrials	Transportations and Logistics	No Response
Port of Auckland	Industrials	Transportations and Logistics	Agreed to Participate
Fletcher Building	Materials	Construction Materials Manufacturing	Agreed to Participate, Interviewed
Vector	Utilities	Utilities	Agreed to Participate, Interviewed
Contact Energy	Utilities	Utilities	Agreed to Participate, Interviewed
Mercury Energy	Utilities	Utilities	Agreed to Participate
Meridian Energy	Utilities	Utilities	Agreed to Participate, Interviewed

Contacted Organisations	Sector	Industry Group	Response
Genesis Energy	Utilities	Utilities	Agreed to Participate, Interviewed
Trust Power	Utilities	Utilities	Declined to Participate
Infratil	Utilities	Utilities	No Response
Total	37 Organisations		24 Agreed, 9 No Response, 4 Declined

Section 7-Global Warming Potential Values

Greenhouse Gas (GHG)	Atmospheric Lifetime (years)	Global Warming Potential	Primary Current Sources
Carbon dioxide (CO2)	50 – 200	1	Fossil fuel use, land use, cement
Methane (CH4)	12 ± 3	21 - 28	Fossil fuel use, agriculture
Nitrous oxide (N20)	120	265 – 310	Mostly agriculture
Hydrofluorocarbons (HFCs)	1.5 to 209	4 – 14,800	Alternative to ozone depleting substances
Perfluorocarbons (PFCs)	2,600 to 50,000	6,500 – 12,200	Primary aluminium production; semiconductor manufacturing
Sulphur Hexafluoride (SF6)	3,200	22,800 – 23,900	Used in electric power transmission, magnesium and semiconductor industries

Source: GHG Protocol (https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf)

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